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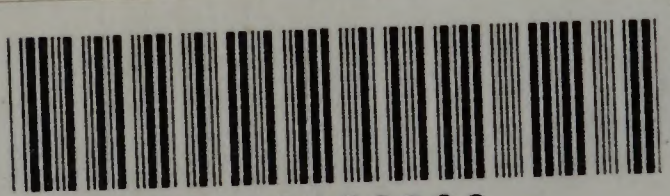

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ANOTHER FAILURE IN THE BRADFORD TRADE.

We understand that circulars have been sent out announcing the failure of a large spinner near Bradford. The liabilities are said to amount to over £20,000, and the assets are not expected to be large.—*Bradford Telegraph.*

COURT OF EXCHEQUER.

YESTERDAY.

(*Sittings in Banco before the Lord Chief Baron and Barons Bramwell and Channell.*)

CHAPMAN V. JONES, CLERK.—JUDGMENT.

This case again came before the court to-day. It was an action against the Vicar of Mottram, in Cheshire, for trespass in knocking off the lock from the outer door of the chancel on the south side of the parish church, known as the Stamford or Staley chapel, and had been brought to try the right of the plaintiff, as grantee of the Earl of Stamford and Warrington, to the freehold of that chancel or private chapel. Saturday, and the facts were

SPIRIT OF THE PRESS.

OUR SPANISH QUARRELS.

A short time ago we drew attention to an insult of a peculiarly offensive and unendurable nature which had been offered to the British flag by the commander of the Spanish gun-boat Andaluza, and we pointed out that it was so great as to demand immediate reparation and apology. The Spanish captain had seized an American brig, the Mary Lowell, in the anchorage of Ragged Island, in British waters, and had carried her off to Havana, thereby violating that rule of free hospitality which we regard with so much and such well-founded jealousy. The outrage was precisely the same as if the Spanish captain had come up the Thames and

THE DUBLIN

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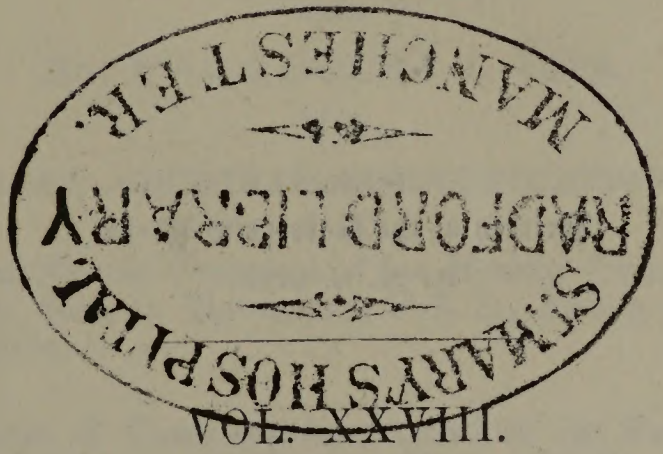
OF

MEDICAL SCIENCE.



VOL. XXVIII.

AUGUST AND NOVEMBER, 1859.

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On the Diagnosis and Treatment of Puerperal Fever. By Dr. F. C. Faye, Professor of Medicine in the University of Norway, Principal Physician to the Lying-in Institution and the Children's Hospital in Christiania. Reprinted from the Norsk Magazin.

ii. Partus Præmaturus; Embryotomie. Ved Dr. F. C. Faye, &c., &c.

Premature Delivery; Embryotomy. By Professor Faye. Reprint.

iii. Discussioner om Medicinalstyrelsen i det medicinske Selskab i Christiania i October, November, og December, 1857.

Discussions respecting State Medicine, held in the Medical Society in Christiania in October, November, and December, 1857. Reprint.

iv. Forelöbig Beretning om et nyt Middel til Fostrets Mutilation. Af Cand. Med. Valentin Heyerdahl.

Preliminary Account of a New Instrument for Embryotomy. By Valentin Heyerdahl, Cand. Med. Reprint.

v. Om Chloroform, og dens Brug ved Fodselshjælpen. Af Val. Heyerdahl, Cand. Med.

On Chloroform and its Use in Midwifery. By Valentin Heyerdahl, Cand. Med. Reprint.

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On Atrophy of the Liver. By Dr. Heinrich Wallmann, . 256

BOOKS RECEIVED.

1. A Memoir on the Treatment of Epidemic Cholera, read before the Members of the French Academy of Sciences, with their Report thereon. By Joseph Ayre, M. D., &c., Hull. London: Churchill, 1859. 8vo. pp. 44.

2. On the Influence of the Variations of Electric Tension, as the Remote Cause of Epidemic and other Diseases. By William Craig, Consulting Surgeon to Ayr Fever Hospital. London: Churchill, 1859. 8vo. pp. 436.

3. Von dem Mangel, der Verkümmerung und Verdoplung der Gebärmutter, von der Nachempfängniss und der Überwanderung des Eies. Von Adolf Kussmaul, Prof. D. Med. in Heidelberg. Würzburg: Stahel, 1859. 8vo. pp. 384. With 58 Woodcuts.

4. Researches on the Intimate Structure of the Brain, Human and Comparative. First Series: On the Structure of the Medulla Oblongata. By J. Lockhart Clarke, F. R. S. From the Philosophical Transactions for 1858. 4to. pp. 29. With 6 Plates.

5. A Guide to the Practical Study of Diseases of the Eye; with an Outline of their Medical and Operative Treatment. By J. Dixon, F. R. C. S., &c. Second Edition. London: Churchill, 1859. Post 8vo. pp. 435.

6. A Treatise upon Penetrating Wounds of the Chest. By Patrick Fraser, M. D. London: Churchill, 1859. 8vo. pp. 140.

7. The Treatment of Obstinate Ulcers and Cutaneous Eruptions of the Leg, without Confinement. By H. T. Chapman, F. R. C. S., &c. Third Edition. London: Churchill, 1859. 12mo. pp. 161.

8. On the Nature and Treatment of the Diseases of the Heart, containing also some New Views on the Circulation of the Blood, with an account of the Musculo-cardiac, the Pulmo-cardiac, and the Veno-pulmonary Functions. By James Wardrop, M. D., &c. A New Edition. Edinburgh: Constable and Co., 1859. 8vo. pp. 667.

9. A Digest of the Vital Statistics of the European and Native Armies in India, interspersed with Suggestions for the Eradication and Mitigation of the Preventible and Avoidable Causes of Sickness and Mortality amongst Imported and Indigenous Troops. By Joseph Ewart, M. D., Bengal Medical Service. London: Smith, Elder, and Co., 1859. 8vo. pp. 182.

10. How to Improve the Teaching in the Scottish Universities. By John Struthers, M. D., &c. Edinburgh: Sutherland and Knox, 1859. Pamphlet, pp. 36.

11. Notes on some of the Principal Indigenous Tonics of India. By E. J. Waring, Madras Medical Service. Reprint. Calcutta: 1858. Pamphlet, pp. 56.

12. Memoirs on Diphtheria, from the Writings of Bretonneau, Guersant, Trousseau, Bouchut, Empis, and Daviot. Selected and Translated by R. H. Semple, M. D. The New Sydenham Society. London: 1859. 8vo. pp. 407.

13. Gooch on some of the most important Diseases of Women; with other Papers. Prefatory Essay by Robert Ferguson, M. D., &c. The New Sydenham Society. London: 1859. 8vo. pp. 235.

14. On the Action of Hard Water upon Lead. By W. L. Lindsay, M. D., &c. Reprint. 1859. Pamphlet, pp. 33.

15. On Primary and Secondary Syphilis of the Uterus. By Langston Parker, Surgeon to the Queen's Hospital, Birmingham. Reprint. 1859. Pamphlet, pp. 18.

16. Fourth Annual Report of the Mullingar Asylum for the Insane Poor of the counties of Longford, Meath, and Westmeath, for the year ended May 31, 1859. Pamphlet, pp. 32.

17. Observations on Strabismus, with the Description of a New Method of Operating. By J. S. Coghill, M. D., &c. Reprint. Glasgow: 1859. Pamphlet, pp. 12.

18. Report of the Pennsylvania Hospital for the Insane for the year 1857. By Thomas S. Kirkbride, M. D., &c. Philadelphia, 1858. Pamphlet, pp. 48.

19. An Essay on the History, Pathology, and Treatment of Diphtheria. By E. Copeman, M. D., &c. Norwich: Stacey, 1859. 8vo. pp. 47.

20. Practical Observations on the Nature and Treatment of Sciatica; with an Introductory Dissertation on Spinal Irritation and Inflammatory Disease of Nervous Structures in general. By H. C. Roods, M. D. London: Churchill, 1859. Pamphlet, pp. 56.

21. Epiphora, or Watery Eye; its Successful Treatment by the New Method of Dilatation. With Illustrative Cases. By J. Vose Solomon, F. R. C. S. L., &c. London: Churchill, 1859. 8vo. pp. 32.

22. The Pathology of Tuberculous Bone. By C. Black, M. D., &c. Reprint. Edinburgh: Sutherland and Knox, 1859. 8vo. pp. 40.

23. On the Treatment of Internal Aneurism by the Method of Valsalva. By Thomas Brady, M. D., &c. Dublin: Fannin and Co., 1859. 8vo. pp. 20.

24. Hufeland's Art of Prolonging Life. Edited by Erasmus Wilson, F.R.S. Second Edition. London: Churchill, 1859. Fcap. 8vo. pp. 270.

25. Description of a Simple Instrument for Inflating the Lungs of Infants born in an Asphyxiated State. By J. G. Wilson, F. R. C. S. E. Glasgow: Gebbie and Co., 1859. Pamphlet, pp. 9.

26. On the Prevention of Consumption by the Use of the Hypophosphites. By J. F. Churchill, M. D. London: Churchill, 1859. Pamphlet, pp. 16.

27. Clinical Lectures on the Diseases of Women and Children. By Gunning S. Bedford, M. D., &c. Fifth Edition. New York: 1857. 8vo. pp. 604.

28. A Treatise on Vital Causes. By J. W. Beale, M. D., Physician to the Hant's County Hospital, &c. London: Churchill, 1859. 8vo. pp. 283.

29. On Hallucinations; a History and Explanation of Apparitions, Visions, Dreams, Ecstacy, Magnetism, and Somnambulism. By A. Briérre de Boismont, M. D., &c. Translated from the French by R. T. Hulme, F. L. S., &c. London: Renshaw, 1859. Fcap. 8vo. pp. 455.

30. Ueber die Innervation der durch Ueberpflanzung gebildeten Nase. Von Dr. Hermann Friedberg in Berlin. Reprint. Pamphlet, pp. 6.

31. Chloroformasphyxie. Künstliche Respiration durch Faradisation des Zwerchfelles und durch methodische Compression des Bauches, Lebensrettung. Von Dr. Hermann Friedberg in Berlin. Reprint. Pamphlet, pp. 8.

32. Twenty-ninth Annual Report of the Resident Physician of the Belfast District Hospital for the Insane Poor of the counties of Antrim and Down, and the county of the town of Carrickfergus. Pamphlet, pp. 32.

33. An Inquiry into the Curability of Consumption, the Prevention and the Progress of Improvement in its Treatment. By James Turnbull, M. D., Physician to the Liverpool Royal Infirmary. Third Edition. London: Churchill, 1859. 8vo. pp. 195.

34. On Dislocations and Fractures. By Joseph Maclise, F. R. C. S., London: Churchill, 1859. Folio. Fasciculi VII., VIII. and IX., completing the work.

35. The British Journal of Homœopathy. No. LXIX., July, 1859. London: Groombridge and Sons.

PERIODICALS WITH WHICH THE DUBLIN QUARTERLY JOURNAL IS EXCHANGED.

GREAT BRITAIN.

1. The British and Foreign Medico-Chirurgical Review and Journal of Practical Medicine. Published Quarterly. London: Churchill. (Received regularly.)

2. The Edinburgh Medical Journal. Published Monthly. Edinburgh: Sutherland and Knox. (Received regularly.)

3. The Retrospect of Medicine, being a half-yearly Journal, containing a retrospective View of every Discovery and practical Improvement in the Medical Sciences. Edited by W. Braithwaite. London: Simpkin and Co. (Received regularly.)

4. The Half-Yearly Abstract of the Medical Sciences, being a practical and analytical Digest of the principal British and Continental Medical Works, &c. Published Half-Yearly. Edited by W. H. Ranking, M. D., and C. B. Radcliffe, M. D. London: Churchill. (Received regularly.)

5. Pharmaceutical Journal and Transactions. Published Monthly. London. Edited by Jacob Bell. (Received regularly.)

6. The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science. Published Monthly. London: Taylor and Francis. (Received regularly.)

7. The Lancet. A Journal of British and Foreign Medicine, Physiology, Surgery, Chemistry, Criticism, Literature, and News. Edited by Thomas Wakley, Surgeon. Published Weekly. London. (Received regularly.)

8. Medical Times and Gazette. Published Weekly. London: John Churchill. (Received regularly.)

9. Association Medical Journal. Edited by A. Wynter, M. D. Published Weekly. London: Honeyman. (Received regularly.)

10. The Medical Circular. Published Weekly. London: Harris. (Received regularly.)

11. The Journal of Psychological Medicine and Mental Pathology. Edited by Forbes Winslow, M. D. Published Quarterly. London: Churchill. (Received regularly.)

12. The Asylum Journal of Mental Science. Edited by J. C. Bucknill, M. D. London: Longmans. (Received regularly.)

13. The Glasgow Medical Journal. Published Quarterly. Griffin and Co. (Received regularly.)

14. The Athenæum—Journal of English and Foreign Literature, Science, &c. Published Weekly. London. (Received regularly.)

15. The Dublin Medical Press. Published Weekly. (Received regularly.)

16. The Dublin Hospital Gazette. Published twice a Month. (Received regularly.)

17. The Natural History Review: including the Transactions of the Irish Natural History Societies, and of the Geological Society of Dublin. Published Quarterly. Dublin: George Herbert. (Received regularly.)

INDIA.

18. The Indian Annals of Medical Science; or, Half-Yearly Journal of Practical Medicine and Surgery. Calcutta: Lepage and Co. (Received regularly.)

19. Transactions of the Medical and Physical Society of Bombay. Printed at the Bombay Education Society's Press. (Received regularly.)

AUSTRALIA.

20. The Australian Medical Journal. Melbourne: Buzzard. Published Quarterly. (Received regularly.)

AMERICA.

21. The American Journal of the Medical Sciences. Edited by Isaac Hays, M. D. Published Quarterly. Philadelphia: Blanchard and Lea. (Received regularly.)

22. The North American Medico-Chirurgical Review. A Bi-monthly Journal. Edited by S. D. Gross, M. D., and T. G. Richardson, M. D. Philadelphia: Lippincott and Co. (Received regularly.)

23. The New York Journal of Medicine. Edited by Stephen Smith, M. D. Published Monthly. New York. (Received regularly.)

24. The American Journal of Science and Arts; conducted by Professors Silliman and B. Silliman, Jun., and J. D. Dana, &c. Published Bimonthly. New Haven. (Received regularly.)

25. The American Journal of Insanity. Published by the New York State Lunatic Asylum, Utica, Quarterly. (Received regularly.)

26. The American Journal of Dental Science. Edited by C. A. Harris, M. D., and A. S. Piggot, M. D. Published Quarterly. Philadelphia: Lindsay and Blakiston. (Received regularly.)

27. Charleston Medical Journal and Review. Published Monthly. Charleston, U. S. (Received regularly.)

FRANCE.

28. Gazette Médicale de Paris. Published Weekly. Paris. (Received regularly.)

29. Gazette Hebdomadaire de Médecine et de Chirurgie. Published Weekly. Paris: Victor Masson. (Received regularly.)

30. Journal de Chimie Médicale, de Pharmacie, de Toxicologie, et Revue des nouvelles, scientifiques, nationales et étrangères, &c. Published Monthly. Paris: Labé. (Received regularly.)

31. Journal de Pharmacie et de Chimie, &c. Published Monthly. Paris: Victor Masson. (Received regularly).

32. L'Union Médicale, Journal des intérêts scientifiques et pratiques, moraux et professionels du Corps médical. Published three times a Week. Paris. (Received regularly.)

33. La Laucette Française, Gazette des Hôpitaux civils et militaires. Published three times a Week. Paris. (Received regularly.)

34. Le Moniteur des Hôpitaux, Revue Médico-Chirurgicale de Paris. Redacteur en chef, M. H. de Castelnau. Paris. Published three times a Week. (Received regularly.)

35. Revue Médicale Française et étrangère, Journal des Progrès de la Médecine Hippocratique. Published twice a Month. Publié par le Docteur Sales-Girons. Paris. (Received regularly.)

36. Archives Générales de Médecine; Journal Complémentaire des Sciences Médicales. Published Monthly. Paris: Labé. (Received regularly.)

37. Bulletin de l'Académie de Médecine. Published Monthly. Paris: Baillière. (Received regularly.)

38. Mémoires de l'Académie de Médecine. (Received regularly.)

39. Revue de Thérapeutique Médico-Chirurgicale. Published twice a Month. Paris: Dr. A. Martin-Lauzer. (Received regularly.)

40. Journal de Médecine et de Chirurgie Pratiques a l'Usage des Médecins. Published Monthly. Par Lucas-Championnière. Paris. (Received regularly.)

41. Journal des Connaissances Médicales pratiques et de Pharmacologie. Published every ten days. Paris. (Received regularly.)

42. Annales Médico-Psychologiques. Par MM. Baillarger, Cerise, et Moreau. Published Quarterly. Paris: Victor Masson. (Received regularly.)

43. Bulletin Général de Thérapeutique, Médicale et Chirurgicale. Recueil pratique. Par le Docteur Debout. Published twice a Month. Paris. (Received regularly.)

44. Repertoire de Pharmacie. Recueil pratique. Par M. le Dr. Bouchardat. Published Monthly. (Received regularly.)

45. Gazette Médicale de Strasbourgh. Published Monthly. (Received regularly.)

46. Revue Thérapeutique du Midi, &c. Par le Dr. Louis Saurel. Published twice a Month. Montpellier. (Received regularly.)

47. Journal de Médecine de Bordeaux. Redacteur en chef, M. Costes. Published Monthly. (Received regularly.)

48. L'Union Médicale de la Gironde. Bordeaux. Published Monthly (Received regularly.)

49. Annales D'Hygiène Publique et de Médecine Légale. Paris. Published Quarterly. (Received regularly.)

50. Gazette Médicale de Lyon. Dirigée par le Dr. P. Diday. Published Bi-Monthly. (Received regularly.)

51. La Clinique Européenne: Journal International de Médecine. Redacteurs en chef, le Dr. Kraus à Vienne et le Dr. Pichler à Paris. Published Weekly. Paris. (Received regularly).

52. Journal de la Physiologie de l'Homme et des Animaux. Publié sous la Direction du Docteur E. Brown-Séquard. Paris: Masson. Published Quarterly. (Received regularly.)

BELGIUM.

53. Annales D'Oculistique. Fondées par le Docteur Florent Cunier. Published Monthly. Brussels. (Received regularly.)

54. Annales et Bulletin de la Société de Médecine de Gand. Published Monthly. (Received regularly.)

GERMANY.

55. Zeitschrift für rationelle Medicin; herausgegeben Von Dr. J. Henle und Dr. C. v. Pfeufer. Published Monthly. Heidelberg and Leipzig: C. F. Winter. (Received regularly.)

56. Zeitschrift der Kais. Kön. Gesellschaft der Aerzte zu Wien. Redacteur: Professor, Dr. Ferdinand Hebra. Vienna: Gerold. (Received irregularly.)

57. Vierteljahrschrift für die praktische Heilkunde, herausgegeben vol. der medicinischen Facultät in Prag. Published Quarterly. Prague: Karn André. (Received regularly.)

58. Canstatt's Jahresbericht über die Fortschritte der gesammten Medicin in allen Ländern. Redigirt von Pr. Scherer, Pr. Virchow, und Dr. Eisenmann. Würzburg: Stahel. (Received regularly.)

59. Journal fiir Kinderkrankheiten. Herausgegeben von Dr. Fr. J. Behrend und Dr. A. Hildebrand. Published Monthly. Erlangen: Palm and Enke. (Received irregularly.)

60. Wochenblatt der Zeitschrift der Kaiserl. Königl. Gesellschaft der Aerzte zu Wien. Published Weekly. Vienna: Gerold. (Received regularly.)

61. Aerztliches Intelligenz-Blatt. Organ für Bayerns Staatliche und öffentliche Heilkunde. Munich: C. Kaiser. (Received regularly.)

PRUSSIA.

62. Archiv für pathologische Anatomie und Physiologie, &c., Herausgegeben von R. Virchow. Berlin: G. Reimer. Published Monthly. (Received regularly.)

HOLLAND.

63. Archiv für die Holländischen Beiträge zur Natur- und Heilkunde. Herausgegeben von F. C. Donders, Utrecht, und W. Berlin, Amsterdam. Utrecht: Kemink and Zoon. (Received regularly.)

NORWAY.

64. Norsk Magazin, for Lægevidenskaben, udgivet af det medicinske Selskab i Christiania. Redigeret af W. Boeck. Faye. A. W. Münster. Lund. Voss. Published Monthly. Christiania: Feilberg & Landmark. (Received regularly.)

SWEDEN.

65. Hygiea, Medicinsk och Pharmaceutisk Månads-Skrift. Published Monthly. Stockholm. (Received regularly.)

DENMARK.

66. Bibliothek for Læger. Udgivet af Direktionen for det Classenske Literaturselskab. Redigeret af Dr. E. Dahlerup. Copenhagen: Reitzels. (Received regularly.)

ITALY.

67. Gazzetta Medica Italiana Federativa Toscana. Florence. Published Weekly. (Received regularly.)

68. Bulletino delle Scienze Mediche. Publicato per cura della Società Medico-Chirurgica di Bologna. Published Monthly. (Received regularly.)

69. Giornale Veneto di Scienze Mediche. Published Monthly. (Received regularly.)

Books and Periodicals published in Northern Europe and the German States, intended for our Journal, should be transmitted "For the Editor of the Dublin Quarterly Medical Journal, care of Messrs. Trübner and Co., London," *through their Correspondents* in the principal Towns on the Continent. Our Correspondents in France, Belgium, Italy, and Spain, are requested to communicate with us through "Doctor Higgins, 212, Rue Rivoli, Paris."

NOTICES TO CORRESPONDENTS.

In consequence of the unusual extent which the Original Communications occupy in our present Number, we have been compelled to postpone for the present several Reviews of New Books; and also some Original Papers.

The Plate No. IV., given in the present Number, illustrates that portion of Dr. Williamson's paper which was published in our last issue; the Binder will, therefore, insert it opposite to page 354 of Vol. XXVII.

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We the receipt of instructions to SELL BY A[illegible] nesday and Thursday, June 9th and 10th, 1869, commencing e[illegible] at eleven o'clock in the forenoon, at the Ormond-street Mi[illegible], C[illegible] upon-Medlock, Manchester, the Whole of the Valuable CO SPINNING MACHINERY and EFFECTS; for particulars o[illegible] ee last Saturday's and future advertisements.—May be viewdays prior to the sale, when catalogues may be had on the prem earlier on application at the offices of the Auctioneers, Savings Buildings, 86, King-street, Manchester.

To Gentlemen, Horse Dealers, &c.—Queen's Hotel Stables, Sale M[illegible]

MR. J. B. NEWTON will SELL BY AUCTIO on Saturday next, May 29, 1869, at three o'clock prompt the Queen's Hotel Stables, Sale Moor, Several Sound and First-cl Ride and Drive HORSES, Cobs, Ponies, Traps, Single and Dou Harness, Double and Single-reined Bridles; Ladies' and Gentlem Saddles, Clothing, &c.—For further particulars, applica[illegible]tion can made at the Auctioneer's, 10, Queen-street, Albert-square, Manchest or Oldfield, Altrincham, Cheshire.—N.B. Gentlemen having horses dispose of may take advantage of the present opportunity to co municate to the Auctioneer at once.

Re Patent Floorcloth Company, in Liquidation.—To Floorcloth or Rubber Manufacturers, Brokers, and others.

T. M. FISHER, SONS, & SMITH will SELL BY AUCTION, by order of the liquidators, TO-MORROW (Wednesday) and Thursday, May 26 and 27, commencing each morning at eleven o'clock, on the premises situate in Gibbon street, Bradford, near Manchester, the following valuable MACHINERY; comprising a capital horizontal steam engine, eight horses' power; high-pressure steam boiler, 12ft. 6in. long, 5ft. diameter, with flue through, and mountings for same; a quantity of shafting and gearing, three pair of French burr stones, bark mill, cork breaking machine, cork sifting machine, four Dunlop's patent mixing machines, one Parrott's calender mixing machine masticator, waste breaking machine, several platform weighing machines, by Pooley and others; steam chests Weston's pulley blocks, double-purchase crab, cast-iron cased cement pans, Haley's patent jack, to lift four tons; portable fire engine, with hose, unions, &c.; capital 12in. double-geared slide and screw-cutting lathe, with compound slide rest and carriage, and set of change wheels; vices, stocks and dies, engineer's tools, & [illegible] many tons of cork, ground and un[illegible] and dies, engineer's tools, & [illegible] many tons of cork, ground and un[illegible] large quantity c[illegible] ints, oils, and dry[illegible] cast-iron paint

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...ence with which you continue to receive my
to serve you. In that address of a quarter of
back, I already dwelt with pride on the high
which, after thirteen years of existence, this
d taken up. It was then that I commenced that
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hotion of Mr. Joseph Hume, to grant us the
um of £500 to keep up a national map-office.
ant, which has ever since been continued, has
us to prosper, free of charge for house rent. Our
rs, however, having augmented from 670 to
our apartments, which we had taken on lease,
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long ago to be capable of holding one-third of the
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een indebted for some years to the liberality of the
society and the University of London for permission
ssemble in their great hall, now, alas! demolished;
now, through the kind consideration of the managers
the Royal Institution; we congregate in their excellent
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racter of our body, and its intimate connection
h the Foreign and Colonial Offices, and the Admiralty,
till entertain the hope that her Majesty's Govern-
nt will ere long provide us with a mansion
fficient for our wants, the more so as six other scientific
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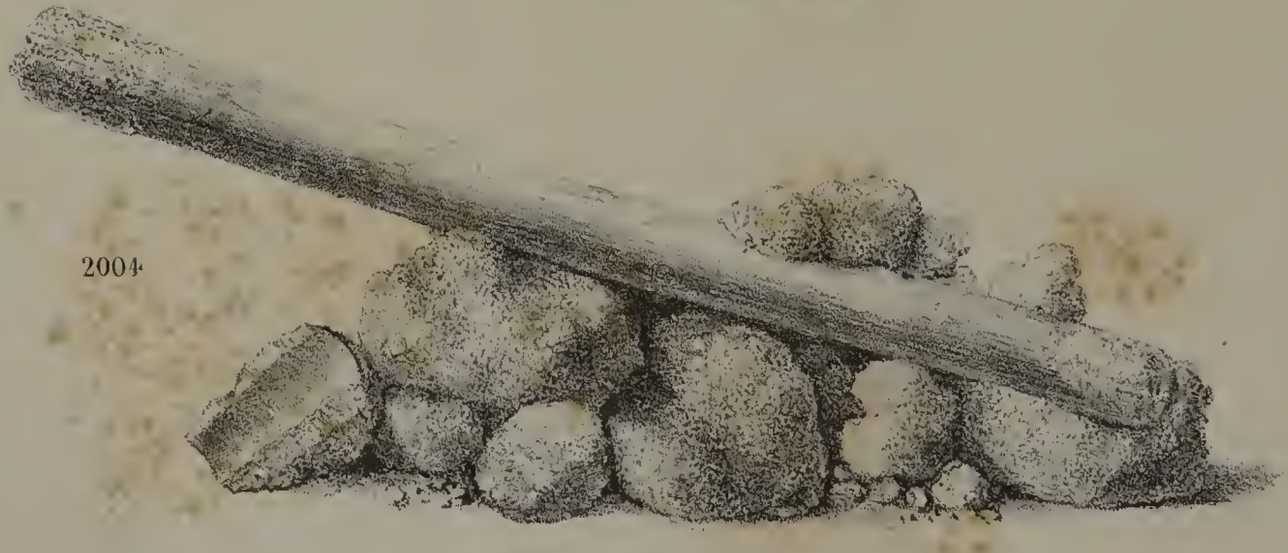

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OF

MEDICAL SCIENCE.

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ii. Thirteenth Report of the Commissioners in Lunacy to the Lord Chancellor. Presented pursuant to Act of Parliament. Ordered by the House of Commons to be printed, August 12, 1859. Blue Book.

iii. First Annual Report of the General Board of Commissioners in Lunacy for Scotland. Presented to both Houses of Parliament by Command of Her Majesty, dated January 28, 1859. Blue Book.

iv. Lunatic Poor (Ireland).—A Bill to Consolidate and Amend the Law relating to the Lunatic Poor in Ireland. (Prepared and brought in by Lord Naas and Mr. Attorney-General for Ireland.) Ordered by the House of Commons to be printed, February 7, 1859.

v. Report from the Select Committee on Lunatics. Together with the Proceedings of the Committee, Minutes of Evidence, Appendix, and Index. Ordered by the House of Commons to be printed, April 11, 1859. Blue Book.

vi. The Journal of Psychological Medicine and Mental Pathology. Edited by Forbes Winslow, M. D., D. C. L. Nos. 13, 14, 15, 16. New Series, for the Year 1859.

vii. The Asylum Quarterly Journal of Mental Science. Published by Authority of the Association of Medical Officers of Asylums and Hospitals for the Insane. Edited by Charles Bucknill, M. D. Lond. Univ., Physician-Superintendent of the Devon County Asylum for the Insane, and President Elect of the Association. Quarterly Numbers 28, 29, 30, and 31, for the Year 1859.

viii. On the State of Lunacy and the Legal Provision for the Insane; with Observations on the Construction and Organization of Asylums. By John T. Arlidge, M. B., A. B. Lond., formerly Medical Superintendent of St. Luke's Hospital, and Physician to the Surrey Dispensary, &c.

ix. Life:—its Relations, Animal and Mental. An Inaugural Dissertation. By J. Dickson Bruns, A. M., M. D.

x. On the Prevention and Treatment of Mental Disorders. By G. Robinson, M. D., Physician to and Proprietor of Bensham Asylum, Gateshead.

xi. On Hallucinations. By A. Brierre de Boismont, M. D. Translated from the French by Robert T. Hulme, F.L.S., M. R. C. S. Eng., and Lecturer on Comparative Anatomy at the Grosvenor-place School of Medicine.

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xii. The American Journal of Insanity. Edited by the Medical Officers of the New York State Lunatic Asylum. January, 1859.

xiii. A Letter to the Right Honorable the Earl of Shaftesbury, &c., &c., on the Laws which regulate Private Lunatic Asylums, with a Comparative View of the Process "De Lunatico Inquirendo" in England, and the Law of "Interdiction" in France. By Edward J. Seymour, M. D., F. R. S., late Senior Physician to St. George's Hospital.

xiv. Tables for the Diagnosis of Diseases of the Brain. By J. Russell Reynolds, M. D. Lond., Fellow of University College, Assistant Physician to the Westminster Hospital.

xv. Report of the Londonderry District Asylum for the Lunatic Poor for Londonderry and Donegal, for the Year ending March 31, 1859. By William Rogan, M.B., Resident Physician.

xvi. Fourth Annual Report of the Mullingar Asylum for the Insane Poor, to May 31, 1859. By Henry Berkeley, M.D., Resident Physician.

xvii. Twenty-ninth Annual Report of the Belfast District Hospital for the Insane, to March 31, 1859. By Robert Stewart, M. D., Physician-Superintendent.

xviii. Eighth Annual Report of the Wilts County Asylum, Devizes, for the Year 1858. By John Thurnam, M. D., Physician-Superintendent.

xix. Fourth and Fifth Annual Reports of the County and City of Worcester Pauper Lunatic Asylum. By James Sherlock, M. D., Medical Superintendent.

xx. Statistical Report of Cases of Insanity treated in Abington Abbey, Northampton, from January 1, 1854, to December 31, 1858. By Thomas Prichard, M. D., Fellow of the Royal College of Physicians of Edinburgh, and formerly Medical Superintendent of the Glasgow Asylum for Lunatics.

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xxiii. Thirty-second Annual Report of the Directors of James Murray's Royal Asylum for Lunatics, near Perth, June 1859.

xxiv. Eighteenth Annual Report of the Crichton Royal Institution for Lunatics, Dumfries, November 11, 1857. By W. A. F. Browne, M.D., Physician-Superintendent.

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Report on the Treatment in the Division of the Royal Hospital appropriated to Cutaneous Diseases, from July 1, 1856, to June 30, 1858. By A. Holst, Physician Extraordinary. Reprint from the Norsk Magazine.

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2. The Watering Places of England; with a Summary of their Medical Topography and Remedial Resources, By Edwin Lee, M. D., &c. Fourth Edition. London: Churchill, 1859. 12mo. pp. 337.

3. Report of the Londonderry District Asylum for the Lunatic Poor of Londonderry and Donegal. For the Year ending 31st March, 1859. Pamphlet, pp. 16.

4. Thirty-second Annual Report of the Directors of James Murray's Royal Asylum for Lunatics, near Perth. June, 1859. Pamphlet, pp. 58.

5. Notes corroborative of the Remarks on the "St. George's Hospital Medical Staff," exemplifying the State of the Medical Profession. By Edwin Lee, M. D. London: Churchill, 1859. Pamphlet, pp. 36.

6. Contributions to Midwifery and Diseases of Women and Children, with a Report on the Progress of Obstetrics and Uterine and Infantile Pathology in 1858. By E. Noeggerath, M. D., and A. Jacobi, M. D. New York: Baillière, Brothers. 1859. 8vo. pp. 466.

7. Sur quelques Difficultés de Diagnostic dans les Maladies Chroniques des Organes Pulmonaires. Par le Docteur René Briau, &c. Paris: Masson. 1859. 8vo. Pamphlet, pp. 38.

8. Considérations Pratiques sur les Maladies de la Guyane et des Pays Marécageux situés entre les Tropiques. Par le Docteur Jules Laure, &c. Paris: Masson. 1859. 8vo. pp. 80.

9. Remarks on the Anatomical Relations between the Mother and Fœtus. By H. Madge, M. D. London: Renshaw, 1859. Pamphlet, pp. 48.

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15. Notes on the Wounded from the Mutiny in India; with a Description of the Preparations of Gunshot Injuries contained in the Museum at Fort Pitt. By George Williamson, M. D., Staff Surgeon. London: Churchill, 1859. 8vo. pp. 124, with 11 lithographic Plates.

16. A System of Surgery, Pathological, Diagnostic, Therapeutic, and Operative. By Samuel D. Gross, M. D., Professor of Surgery in the Jefferson Medical College of Philadelphia, &c. Illustrated by 936 Engravings. Philadelphia: Blanchard and Lea, 1859. 2 vols. 8vo. pp. 1162 and 1198.

17. Lunatic Asylums, Ireland. The Ninth Report on the District, Criminal, and Private Lunatic Asylums in Ireland; with Appendices. Presented to both Houses of Parliament by command of Her Majesty. Folio. pp. 57.

18. The British Soldier in India. By F. J. Mouat, M. D., F. R. C. S., Surgeon, H. M.'s Bengal Army. London: Lepage and Co., 1859. 8vo. pp. 87.

19. An Account of the Life, Lectures, and Writings of William Cullen, M. D., Professor of Practice of Physic in the University of Edinburgh. By John Thomson, M. D., &c., &c. Edinburgh: Blackwood and Sons, 1859. 2 vols. 8vo. pp. 668 and 764.

20. The Climate of Brighton. By William Kebbell, M. D., Physician to the Sussex County Hospital. London: Longmans, 1859. 12mo. pp. 187.

21. A Guide to the Treatment of Diseases of the Skin, with Suggestions for their Prevention: for the Use of the Student and General Practitioner. By Thomas Hunt, F. R. C. S., &c. London: Richards, 1859. Fcap. 8vo. pp. 246. Fourth Edition.

22. Homœopathy and Hydropathy impartially appreciated. With Notes illustrative of the Influence of the Mind on the Body. By Edwin Lee, M. D., &c. Fourth Edition. London: Churchill, 1859. 12mo. pp. 155.

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24. Preventive Medicine. Statistics of Small Pox and Vaccination in the United Kingdom, and the Necessity for a better System of Vaccination in Ireland. Read at the Meeting of the British Association, Aberdeen. By William Moore, A. B., M. B., &c. Dublin: Fannin and Co., 1859. Pamphlet, pp. 14.

25. Notes on Hospitals. Being the Papers read before the National Association for the Promotion of Social Science at Liverpool, in October, 1858. With Evidence given to the Royal Commissioners on the State of the Army in 1857. By Florence Nightingale. London: Parker, 1859. 8vo. pp. 108.

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27. On the Diseases and Injuries of the Joints. Clinical and Pathological Observations. By Thomas Bryant, F. R. C. S., &c. London: Churchill, 1859. 8vo. pp. 273.

28. De Invloed der Zenuwen op de Ontsteking proefondervindelijk getoetst. Door H. Snellen. Utrecht: P. W. van de Weijer, 1857.

29. Beretning om Behandlingen paa Rigshospitalet Hudsygeafdeling fra 1ste Juli, 1856, til 30te Juni, 1858. Af Reservelæge A. Holst. Aftrykt af Norsk Magazin for Lægevidenskaben.

30. Phthisis and the Stethoscope; or, the Physical Signs of Consumption. By R. Payne Cotton, M. D., &c. Second Edition. London: Churchill, 1859. Fcap. 8vo. pp. 80.

31. Tents and Tent-life, from the Earliest Ages to the Present Time. To which is added, the Practice of Encamping an Army in Ancient and Modern Times. By Godfrey Rhodes, Major (Unattached). New Edition, London: Clowes and Sons, 1859. 12mo. pp. 267.

32. A Manual of Operative Surgery on the Dead Body. By Thomas Smith, F. R, C. S., &c. With Illustrations. London: Longmans, 1859. Post 8vo. pp. 139.

33. Archives of Medicine. Edited by Lionel S. Beale, M. B., F. R. S., &c. London: Churchill, 1859. No. IV. Illustrated with Woodcuts and Lithographs.

34. The British Journal of Homœopathy. No. LXX., October, 1859. London: Groombridge and Sons.

35. The Work and the Counterwork; or, the Religious Revival in Belfast; with an Explanation of the Physical Phenomena. By Edward A. Stopford, Archdeacon of Meath. Dublin: Hodges, Smith, and Co., 1859. Pamphlet, pp. 106. 5th edition.

36. The Sense Denied and Lost. By Thomas Bull, M. D., &c. (for the last eight years of his life deprived of sight). Edited by the Rev. B. G. Johns. London: Longmans, 1859. Fcap. 8vo. pp. 214.

37. Guy's Hospital Reports. Edited by Samuel Wilks, M. D., and Alfred Poland. Third Series. Vol. V. 8vo. pp. 391.

38. Throat Ailments; more especially the Enlarged Tonsil and Elongated Uvula, in Connexion with Defects of Voice, Speech, Hearing, Deglutition, Respiration, Cough, Nasal Obstruction, and the imperfect Development of Health, Strength, and Growth, in Young Persons. By J. Yearsley, M. R. C. S. E., &c. Seventh Edition. London: Churchill, 1859. 8vo. pp. 112.

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40. The Surgeon's Vade Mecum: a Manual of Modern Surgery. By Robert Druitt, Licentiate of the Royal College of Physicians of London, &c. London: Renshaw and Churchill, 1859. Eighth Edition. Much improved, and illustrated by 328 highly finished Wood Engravings. Fcap. 8vo, pp. 791.

PERIODICALS WITH WHICH THE DUBLIN QUARTERLY JOURNAL IS EXCHANGED.

GREAT BRITAIN.

1. The British and Foreign Medico-Chirurgical Review and Journal of Practical Medicine. Published Quarterly. London: Churchill. (Received regularly.)

2. The Edinburgh Medical Journal. Published Monthly. Edinburgh: Sutherland and Knox. (Received regularly.)

3. The Retrospect of Medicine, being a half-yearly Journal, containing a retrospective View of every Discovery and practical Improvement in the Medical Sciences. Edited by W. Braithwaite. London: Simpkin and Co. (Received regularly.)

4. The Half-Yearly Abstract of the Medical Sciences, being a practical and analytical Digest of the principal British and Continental Medical Works, &c. Published Half-Yearly. Edited by W. H. Ranking, M. D., and C. B. Radcliffe, M. D. London: Churchill. (Received regularly.)

5. Pharmaceutical Journal and Transactions. Published Monthly. London. Edited by Jacob Bell. (Received regularly.)

6. The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science. Published Monthly. London: Taylor and Francis. (Received regularly.)

7. The Lancet. A Journal of British and Foreign Medicine, Physiology, Surgery, Chemistry, Criticism, Literature, and News. Edited by Thomas Wakley, Surgeon. Published Weekly. London. (Received regularly.)

8. Medical Times and Gazette. Published Weekly. London: John Churchill. (Received regularly.)

9. Association Medical Journal. Edited by A. Wynter, M. D. Published Weekly. London: Honeyman. (Received regularly.)

10. The Medical Circular. Published Weekly. London: Harris. (Received regularly.)

11. The Journal of Psychological Medicine and Mental Pathology. Edited by Forbes Winslow, M. D. Published Quarterly. London: Churchill. (Received regularly.)

12. The Asylum Journal of Mental Science. Edited by J. C. Bucknill, M. D. London: Longmans. (Received regularly.)

13. The Glasgow Medical Journal. Published Quarterly. Griffin and Co. (Received regularly.)

14. The Athenæum—Journal of English and Foreign Literature, Science, &c. Published Weekly. London. (Received regularly.)

15. The Dublin Medical Press. Published Weekly. (Received regularly.)

16. The Dublin Hospital Gazette. Published twice a Month. (Received regularly.)

17. The Natural History Review: including the Transactions of the Irish Natural History Societies, and of the Geological Society of Dublin. Published Quarterly. Dublin: George Herbert. (Received irregularly.)

INDIA.

18. The Indian Annals of Medical Science; or, Half-Yearly Journal of Practical Medicine and Surgery. Calcutta: Lepage and Co. (Received regularly.)

19. Transactions of the Medical and Physical Society of Bombay. Printed at the Bombay Education Society's Press. (Received regularly.)

AUSTRALIA.

20. The Australian Medical Journal. Melbourne: Buzzard. Published Quarterly. (Received regularly.)

AMERICA.

21. The American Journal of the Medical Sciences. Edited by Isaac Hays, M. D. Published Quarterly. Philadelphia: Blanchard and Lea. (Received regularly.)

22. The North American Medico-Chirurgical Review. A Bi-monthly Journal. Edited by S. D. Gross, M. D., and T. G. Richardson, M. D. Philadelphia: Lippincott and Co. (Received regularly.)

23. The New York Journal of Medicine. Edited by Stephen Smith, M. D. Published Monthly. New York. (Received regularly.)

24. The American Journal of Science and Arts; conducted by Professors Silliman and B. Silliman, Jun., and J. D. Dana, &c. Published Bimonthly. New Haven. (Received regularly.)

25. The American Journal of Insanity. Published by the New York State Lunatic Asylum, Utica, Quarterly. (Received very irregularly.)

26. The American Journal of Dental Science. Edited by C. A. Harris, M. D., and A. S. Piggot, M. D. Published Quarterly. Philadelphia: Lindsay and Blakiston. (Received regularly.)

27. Charleston Medical Journal and Review. Published Monthly. Charleston, U. S. (Received regularly.)

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FRANCE.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*On the Natural Constants of the Healthy Urine of Man*[a].

By the REV. SAMUEL HAUGHTON, F.R.S., Fellow of Trinity College, Dublin.

THE following investigation was suggested to me by a remark of Bernouilli, to the effect that the total quantity of work of which a healthy man was capable appeared to him to be constant, no matter in what description of labour he was employed. The facts, as he understood them, were against this view: and he was forced reluctantly to give up his opinion. Before I read the opinion of this great man, I had arrived, from reflection and observation, at a similar result; and I think good reasons may be assigned, in the present state of our chemical knowledge, for a reasonable belief in this opinion. It is generally believed that the daily food we consume undergoes a process of oxidation before it is finally removed as waste matter from the system. This may be, and doubtless is, far from the whole truth; but, as far as it goes, it is true, and its investigation to its legitimate consequences must lead to correct views of nutrition and labour. It occurred to me that the natural and proper measure of the value of a given diet was the amount

[a] See vol. xxvii. p. 374.

of work it would produce in a healthy animal, such as man. This was Bernouilli's idea, but he applied it simply to mechanical labour of which man was capable, and so fell into error, natural to the deficient knowledge of his time.

The following appears to be a juster view of the subject:—

1. A man in health consumes, per day, a certain amount of food and drink, and excretes per day an equal amount of waste matter, supposing him to be full grown, in good health, and not gaining or losing flesh:—

2. The excretions are effected in four ways: *per halitum*, *per cutem*, *per vesicam*, *per anum*, and are more highly oxidated than the food and drink consumed.

3. The difference of oxidation of the *ingesta* and *excreta*, converted into work, should account for, and be equal to, the total labour effected per diem.

4. The work done per day may be divided into—

a. The effort necessary to live, or the work spent on the performance of organic functions—*Opera vitalia*.

b. The work, converted into heat, requisite to keep up the animal temperature—*Opera calorifica*.

c. The mechanical work effected by bodily labour—*Opera mechanica*.

d. The unknown, and hitherto unmeasured, work done by the mind—*Opera mentalia*.

It is an opinion of physiologists, and appears to be well founded, that the animal heat is fully accounted for by the oxidation of food effected *per halitum*. There remain, therefore, three excretions to consider, and three kinds of work to account for by their means, viz.:—

Excreta.—1. Per cutem; 2. Per vesicam; 3. Per anum.

Opera.—1. Vitalia; 2. Mechanica; 3. Mentalia.

I shall not attempt, in this communication, to discuss the general question, but shall confine myself to those subjects on which I have experimented directly, viz., the excretions *per vesicam*, and the mechanical labour of body, and work of mind, of which man is capable.

My experiments on urine were all made on the urine of healthy men, and were directed chiefly to the determination of the daily quantities of nitrogen and phosphorus excreted. I was forced into this course of chemical experiments by finding, in various authorities consulted by me, the most various estimates of a quantitative character relative to these subjects. For the convenience of reference, I shall divide my paper into four parts:—

I. The daily discharge of urea in healthy urine of man.
II. The daily discharge of uric acid in healthy urine of man.
III. The daily discharge of phosphoric acid in healthy urine of man.
IV. Comparison of the foregoing with the daily work, bodily and mental, and with the daily food, of man.

Part I.—*The daily discharge of Urea in healthy Urine of Man.*

The earlier writers on this subject refer the quantity of urea either to the fluid ounce, or to 1000 parts: both of these modes of estimating urea have been properly discarded by later writers, who estimate the quantity of urea discharged per twenty-four hours, considering this to be the natural period of man's cycle of labour, food, and rest.

The English medical writer on Urine who appears to be held in most repute is the late Dr Golding Bird, whose work has passed through five editions. He does not appear to have ever made any experiments himself, but is content to quote[a] from Becquerel's work.

I.—*Daily Urea.*

Daily urea of man, ...	270 grains.
Daily urea of woman, ...	240 ,,

The following determinations of urea in 1000 parts have been given by other writers:—

II.—*Urea in* 1000 *Grains.*

Berzelius, ...	30·10	grains.	
Lehmann, ...	31·45	,,	
Ditto, ...	32·91	,,	
Ditto, ...	32·90	,,	
Becquerel (man), ...	13·84	,,	1019 sp.gr.
Ditto (woman), ...	10·36	,,	1015 ,,
Simon, ...	12·46	,,	1011 ,,
Ditto, ...	14·58	,,	1012 ,,

The discrepancies in the foregoing results show that it is absolutely necessary to fix upon some standard of comparison, such as the total quantity per twenty-four hours; otherwise our results will be vitiated by the drinking of a glass or two more or less of water per day, and by other trivial causes. Lehmann's three results are stated to be derived from twenty-four hours'

[a] Fifth Edition, page 75.

urine of a well-fed and healthy young man, but the total quantity passed is not stated.

Elsewhere M. Lehmann obtained the following interesting results from experiments made on himself:—

III.—*Urea per* 24 *Hours of M. Lehmann.*

Animal Diet.	Mixed Diet.	Vegetable Diet.	Non-Nitrogenous Diet.
821 grs.	501½ grs.	347 grs.	238 grs.

The following results, given by M. Lecanu, are also referred to a period of twenty-four hours:—

IV.—*Urea per* 24 *Hours, determined by M. Lecanu.*

Adult men, ...	431·9 grs.
Adult women, ...	294·2 „
Very old men (84–86), ...	124·8 „
Children (under 8), ...	138·2 „

Bischoff also has determined the daily quantity of urea passed by a well-fed man, of thirty-one years of age.

V.—*Urea per* 24 *Hours, at* 31 *Years of Age, by M. Bischoff.*

Urea, ...	585 grs.

On the preceding Tables the following remarks may be made:—

No. I. is to be rejected altogether, as it is totally erroneous by defect, and the deficiency must have arisen from the use of some imperfect method of determining the urea, such as by the nitrate or oxalate.

No. II. is unintelligible without a statement of the total quantity of urine passed per day in each case.

No. III. I believe to be excellent, as far as it goes, but it rests upon experiments made upon a single individual.

No. IV. omits to state the diet of the individuals experimented upon, and is, therefore, less interesting than it would otherwise have been.

No. V. agrees admirably with my own results.

The foregoing summary contains, I believe, all that was known on this subject at the time I commenced my experiments, which I should never have undertaken had I found it possible to obtain reliable information in the books.

I made some preliminary trials as to the various methods in use among chemists for the determination of urea quantitatively, and found Liebig's volumetric process, by means of nitrate of mercury, to give the most accurate and consistent results.

Having decided on the mode of analysis to be employed, I divided my subjects for experiment into two classes:—

1. Well-fed, flesh-eating, wine-drinking men.
2. Well-fed, water-drinking vegetarians.

The following Tables contain the result of my experiments:—

Table A.—*Beef-eaters.*

No.	Urea, per Day.	Urine, per Day.	Specific Gravity.	Urea, per fluid ℥.	Solids, per Day.
	Grains.	Ounces.		Grains.	Grains.
1	465·09	34	1023·8	13·70	817·25
2	677·25	62	1019·0	10·11	1065·69
3	644·62	52	1018·5	12·40	998·55
4	554·00	50	1015·8	11·08	818·00
5	630·00	45	1028·2	14·00	1330·20
6	484·30	41	1024·8	11·81	1051·25
Mean,	**575.87**	**47.3**	**1021.7**	**12.18**	**1013.49**

No. 1. Age, 37; weight, 126 lbs.; occupation, walks 5 miles per day, studies 5 hours per day; food, 8 oz. fresh meat; 8 oz. white bread; 10 oz. vegetables.

No. 2. Age, 35; weight, 126 lbs.; occupation, partridge-shooting, office-work 3 hours, anxious about business matters; food, mixed diet.

No. 3. Age, 19; weight, 126 lbs.; occupation, studies 5 hours; walking and athletic games, 2 hours; won the prize for the long jump at the Trinity College Foot Races; food, mixed.

No. 4. Age, 39; weight, 174 lbs.; occupation, walks 2 miles, office-work, 6 hours; food, mixed.

No. 5. Age, 40; weight, 189 lbs.; occupation, walks 4 miles, studies 4 hours; food, mixed.

No. 6. Age, 40; weight, 145 lbs.; occupation, walks 5 miles, studies 2 hours; food, mixed.

From the preceding results it follows that 576 grains of urea per day is the natural discharge, *per vesicam*, of the class

of men experimented upon. This agrees with Bischoff's and Lehmann's experiments made upon themselves.

I shall make no observation at present on the range from 100 grains below to 100 grains above the average, as I do not believe it to depend on any single circumstance, such as weight, bodily exercise, &c., but upon a combination of circumstances which I hope fully to discuss in the concluding part of this paper.

I have also to add that every one of these specimens of urine gave, on the addition of nitric acid, at 50° Fahr., after standing twenty-four hours, a precipitate of crystals of nitrate of urea. This circumstance I do not believe to be a proper test of excess of urea in urine.

The following Table contains the corresponding results of my experiments on vegetarians:—

Table B.—*Vegetarians.*

No.	Urea, per Day.	Urine, per Day.	Specific Gravity.	Urea, per fluid ℥.	Solids, per Day.
	Grains.	Ounces.		Grains.	Grains.
1	367·50	70	1014·00	5·25	1012·90
2	578·81	81	1014·76	7·14	1236·87
3	315·00	45	1015·23	7·00	712·50
4	366·12	56	1012·41	6·54	717·08
5	342·55	43	1017·17	7·87	775·60
Mean,	**393.99**	**59**	**1014.71**	**6.76**	**890.99**

No. 1. Age, 63; weight, 173 lbs.; occupation, walks 3 miles per day, office-work 1 hour; food, 1 egg, 6 oz. bread, vegetables *ad lib.*, 16 fl. ℥ milk, 40 fl ℥. water.

No. 2. William Wall, 16th Regt. (2nd Battalion), in Military Prison, Dublin. Age, 22; weight, 132 lbs.; occupation, 3 hours' shot drill, $1\frac{1}{4}$ hour ordinary drill, $3\frac{1}{2}$ hours oakum picking; food, breakfast, 8 oz. oatmeal, $\frac{1}{2}$ pint of milk,—dinner, 9 oz. Indian meal, $\frac{1}{2}$ pint of milk,—supper, 8 oz. of bread, $\frac{1}{2}$ pint of milk.

No. 3. William Tysack, Military Train, in Military Prison, Dublin. Age, 31; weight, 146 lbs.; occupation and food, same as last.

No. 4. Thomas M'Donald, 18th Regt. (2nd Battalion), in

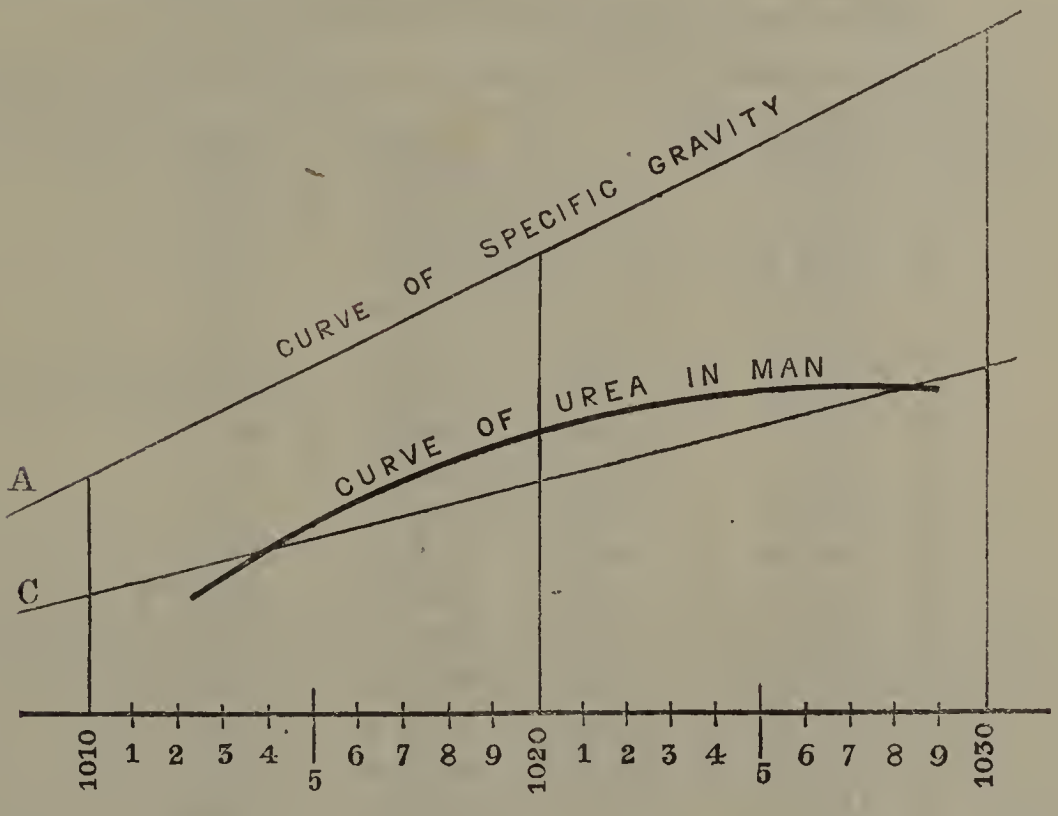
Military Prison, Dublin; age, 22; weight, 146 lbs.; occupation and food, same as last.

No. 5. Same man as No. 3, a fortnight subsequent.

From the preceding, it follows that 394 grains is the natural discharge of urea from a well-fed vegetarian per day. No. 2 appears to be exceptional, and above the usual average; but, even allowing for this, it would appear that the average for vegetarians is considerably above what is considered usually by medical men in this country as the proper average of well-fed men, on the authority of Golding Bird. It is quite certain that a physician, applying Bird's rule in his private practice, would, probably, pronounce 90 well-fed men, out of every 100 who consulted him, to be labouring under diabetes insipidus: although, from the foregoing experiments, they should be entitled to be considered as in the enjoyment of excellent health.

I shall now attempt to connect the quantity of urea in healthy urine with the specific gravity.

The result of all my experiments is shown in the annexed diagram, in which the base line represents the specific gravity, and the vertical ordinates, the number of grains per fl. ℥, either of solids or urea.



The right line A, marked *Curve of specific gravity*, is drawn by making the ordinate equal the abscissa, minus 1000; thus, 1015 sp. gr. has an ordinate of 15 units measured off; 1020 sp. gr. has an ordinate of 20, and so on.

The line C is formed by dividing the ordinates of the line A in half; and the *curve of urea in man* is formed by taking for each specific gravity observed, an ordinate equal to the number of grains of urea per fl. ℥ corresponding.

This curve of urea intersects the line dividing the ordinates of the curve of specific gravity in half, at points corresponding to the specific gravities 1014 and 1028. If, therefore, the specific gravity of healthy urine be 1014 or 1028, the number of grains of urea per fl. ℥ will be 7 or 14 respectively. For all specific gravities intermediate between these limits, the number of grains of urea per fl. ℥ will be *greater* than half the excess of the specific gravity above 1000; and for specific gravities *below* 1014 and *above* 1028, the number of grains of urea per fl. ℥ will be *less* than half the excess of specific gravity above 1000.

The following Table contains the summary of all my experiments on this subject:—

Table *derived from Experiment, showing the relation between the Specific Gravity of Healthy Urine, and the Quantity of Urea contained in it.*

Specific Gravity of Urine.	Grains of Urea per oz. of Urine.	Specific Gravity of Urine.	Grains of Urea per oz. of Urine.
1010·0	. . .	1020·0	12·2
1010·5	. . .	1020·5	12·4
1011·0	. . .	1021·0	12·6
1011·5	. . .	1021·5	12·9
1012·0	. . .	1022·0	13·1
1012·5	5·0	1022·5	13·3
1013·0	5·7	1023·0	13·4
1013·5	6·6	1023·5	13·5
1014·0	7·2	1024·0	13·7
1014·5	7·8	1024·5	13·8
1015·0	8·4	1025·0	13·9
1015·5	8·8	1025·5	13·95
1016·0	9·2	1026·0	14·0
1016·5	9·6	1026·5	14·0
1017·0	10·0	1027·0	14·0
1017·5	10·4	1027·5	14·0
1018·0	10·9	1028·0	14·0
1018·5	11·2	1028·5	13·95
1019·0	11·5	1029·0	13·9
1019·5	11·9	1029·5	. . .

It is evident from the diagram, p. 7, that the curve which represents the relation of the quantity of urea in healthy urine to the specific gravity of the latter is not a right line; or, in other words, that the quantity of urea is not *proportional* to the specific gravity.

The curve laid down in the diagram is a representation of the Table, and may be algebraically expressed by a parabolic curve, as follows:—

Let y denote the grains of urea per fl. ℥ in any specimen of urine, not containing either sugar or albumen; and let x denote the excess of specific gravity above 1000. Then,—

$$y = A + Bx + Cx^2. \qquad (1)$$

And, since when $x = 14$, $y = 7$; and when $x = 28$, $y = 14$; and the curve then reaches its highest point, it is easy to show that,—

$$\begin{aligned} A &= -14 \\ B &= \quad 2 \\ C &= -\tfrac{1}{28} \end{aligned} \qquad (2)$$

From these values it can be shown that the curve of urea (1) may be put into the form,—

$$[28 - x]^2 = 28\,[14 - y], \qquad (3)$$

which is the equation of a parabola whose parameter is 28.

It is easy to verify this equation by the Table already given. For example, let the specific gravity be 1018, then we have,—

$$\begin{aligned} (28-18)^2 &= 28\,(14-y) \\ 100 &= 28\,(14-y) \\ y &= 10{\cdot}5 \text{ grs.} \end{aligned}$$

Let specific gravity = 1024, then,—

$$\begin{aligned} (28-24)^2 &= 28\,(14-y) \\ 16 &= 28\,(14-y) \\ y &= 13{\cdot}43 \text{ grs.} \end{aligned}$$

These results, and others similar to them, obtained from the parabolic curve (3), differ slightly from those found directly by experiment, and given in the Table, showing that the parabolic curve does not accurately represent the curve of urea; but it evidently does so within a degree of approximation much less than is required by medical men, for whose purposes the following bedside rule may prove quite sufficient:—"*Half the excess of the specific gravity of urine* (*not containing either sugar or albumen*), *above* 1000, *is the number of grains of urea per fluid* ℥."

This rule gives the line C, p. 7, for the curve of urea, with which it agrees at the specific gravities of 1014 and 1028.

The following determination of urea in sheep's urine may prove interesting, for comparison with the urine of man; the range of specific gravity is greater, and the proportion of urea to specific gravity is also greater:—

	Specific Gravity.	Urea, Grains, per fluid ʒ.
Urine of ram, ...	1057·06	37·33
Urine of ewe, ...	1008·93	6·41

Before concluding this part of my paper relating to urea, I may add the following interesting facts, although they do not properly belong to the subject of healthy urine. I examined carefully for urea, having first got rid of albumen, the serous effusion of the pericardium of two subjects, both women, one of whom had died of Bright's disease, with dropsy; and the other had perfectly healthy kidneys. The result of the examination was as follows:—

	Grains, per fluid ʒ.
1. Subject with diseased kidneys, . . .	3·05
2. Subject with healthy kidneys, . . .	1·31

The difference in the two cases is sufficiently striking, and the total quantity of urea in the dropsical effusion of No. 1 must have been very great; yet the quantity in the case No. 2 is also so large as to make us hesitate as to the conclusions to be drawn from the qualitative determination of the presence of urea found, on a post-mortem examination, in the pericardium, or in the ventricles of the brain.

Part II.—*The daily discharge of Uric Acid in healthy Urine of Man.*

The following Tables contain the results I obtained from my experiments, with respect to Uric and Hippuric acids. They are so different from those usually received that they would require explanation, which I should offer, were it not that I believe that both uric and hippuric acids are accidental in healthy urine, though the former is always found in small quantity; the latter, hippuric acid, occurred to me only once, though it was carefully sought in each case. When I say that uric acid is accidental in healthy urine, I do not mean to say that it occurs like chlorine and sulphuric acid, the quantity of which depends directly on the chloride of sodium, and sulphate of alumina and potash consumed with the food; but I

do mean, that no uric acid whatever should occur in the urine of a man in perfect health, but that all the nitrogen of the urine should pass off in the form of urea, a more highly oxidated product than uric acid.

The following determinations of uric acid passed in twenty-four hours have been given:—

VI.—*Uric Acid discharged per Day.*

	Grains.
Becquerel,	8·10
Neubauer,	5·08
Ditto,	7·63
Lehmann,	18·17

It is stated by Liebig, that 7·5 grains of hippuric acid are discharged by the urine per day; this is quite at variance with my results, as will appear from the following Tables:—

Table C.—*Uric Acid per Day* (*Beef-eaters*).

No.	Grains per Day.
1,	1·02
2,	11·88
3,	1·04
4,	7·40
5,	5·29
6.	0·71
Mean,	**4.55**

Table D.—*Uric Acid per Day* (*Vegetarians*).

No.	Grains per Day.	
1,	0·50	
2,	0·71	
3,	1·69	partly hippuric acid.
4,	2·48	
5,	2·03	partly hippuric acid.
Mean,	**1.48**	

When we consider that the quantity of urea passed by the persons considered in these Tables, per day, is 576 grains, and 394 grains, respectively, we may fairly consider the uric acid discharged simply in the light of a minute fraction of nitrogen, which has escaped complete oxidation, and as a matter rather of chemical than physiological interest.

The only case in which I detected hippuric acid was that of William Tysack (Nos. 3 and 5, Tables B and D). His urine

had a remarkable smell, compounded of that of sweet hay and apple-juice, and differed in its sensible qualities from the other urines examined.

All the preceding experiments were made on not less than from 20 to 50 ounces of urine, and I am certain that all the uric acid was obtained.

Part III.— *The daily discharge of Phosphoric Acid in healthy Urine of Man.*

There is no subject respecting which more difference of opinion exists than with reference to Phosphoric acid eliminated by the kidneys; some investigators considering that it is as accidental in its character, and as dependent on food, as chlorine or sulphuric acid; while others regard it as the direct product of the disintegration of nervous tissue, and, as such, entitled to our regard as the measure of nervous work done by the system. In whatever point of view it is to be considered, it is obviously important to determine its daily amount in the case of healthy men, under different conditions as to food and work of mind and body. I therefore determined its absolute amount per day with much care; and, in my later experiments, ascertained also the proportions in which it occurred combined with alkalies, with those in which it was found in combination with lime and magnesia.

The following Tables are divided, as before, into the flesh-fed and vegetarian subjects:—

Table E.—*Discharge of Phosphoric Acid per Day* (*Beef-eaters*).

No.	Phosphoric Acid.	Weight.
	Grains.	lbs.
1	47·14	126
2	43·28	126
3	40·78	126
4	38·10	174
5	23·72	189
6	29·43	145
Mean,	**37.07**	

I have placed the weights of the several subjects in connexion with their respective discharges of phosphoric acid, and I think it will be admitted that there is no direct proportion

between them, such as would be the case, were the discharge of phosphoric acid dependent simply on a waste of albuminous or other tissues proportional to the mass of the individual considered.

Table F.—*Discharge of Phosphoric Acid per Day (Vegetarians).*

No.	Total Phosphoric Acid.	In combination with Earths.	In combination with Alkalies.
	Grains.	Grains.	Grains.
1	30·00		
2	32·47	5·92	26·55
3	22·78		
4	27·54	6·30	21·24
5	20·70	3·46	17·24
Mean,	**26.70**	**5.23**	**21.67**

I have reason to believe that the proportion of phosphoric acid, in combination with alkalies, to that in combination with earths, given above, viz., 4 to 1, is the same in well-fed men as in vegetarians, and that it may be confidently used in drawing conclusions with respect to this subject.

To show how ill founded the idea is, that the waste of nervous matter in the system gives rise exclusively to the discharge of phosphoric acid, the following calculations may prove of some interest. Adopting Vauquelin's determination of the phosphorus in the brain at 1·5 per cent, and taking the weight of the brain and spinal cord from the most recent experiments, at 51 ounces, we find, the following chain to determine the total phosphoric acid existing in these nervous centres at any given moment:—

Term of demand, 1 man.

1 — 51 $\frac{3}{5}$ nervous matter.

1000 — 15 $\frac{3}{5}$ phosphorus.

32 — 72 $\frac{3}{5}$ phosphoric acid.

16 — 7000 grs. phosphoric acid.

= 753·04 grs.

This quantity of phosphoric acid in the nervous system of a well-fed man, discharging 37 grains per day, *per vesicam*, would only last for twenty days; and although the brain is better supplied with blood than any other portion of the body, it is quite

incredible that the process of renovation can proceed at such a rate as to replace all its phosphorus in twenty days.

On the other hand, we may fairly conclude that only the phosphoric acid, in combination with lime and magnesia, can be considered as having its origin in the wear and tear of the bony tissue; and, assuming the average weight of bone-earth in a man of 150 lbs. to be 10 lbs., we find the following chain to determine the number of days in which his bones can be removed *per vesicam*, and replaced by suitable food:—

Term of demand, 1 man.
1 — 150 lbs.
150 — 10 lbs. bone earth.
156 — 72 lbs., PO_5.
1 — 7000 grs. PO_5.
5 — 1 day.
365 — 1 year.

= 17·70 years.

Whatever may be thought of the idea that our bones are replaced in the manner here supposed, the result obtained is certainly less improbable than the former. I give them both, without attaching weight to them, as examples of the uses to which the analyses of healthy urine may be turned.

The following summary contains the results of my experiments on the eleven specimens of urine of twenty-four hours, examined by me. I made several careful determinations of the relation between specific gravity and the total quantity of solid matter per fluid ℥, and I found my experiments agree so closely with the Table published in Dr. Golding Bird's work, and deduced from Dr. Christison's formula, that I adopted the results of this Table in all my subsequent experiments.

Table G.—*Well-fed Beef-eaters.*

No. 1.

	Grains per Day.
1. Urea,	465·09
2. Uric acid,	1·02
3. Fixed salts, earthy,	23·46
,, alkaline,	214·54
4. Difference,	113·14
Total,	817·25
A. Chlorine,	26·30
B. Phosphoric acid,	47·14

Table G—*continued.*

No. 2.

	Grains per Day.
1. Urea,	677·25
2. Uric acid,	11·88
3. Fixed salts, earthy,	22·68
,, alkaline,	221·94
4. Difference,	131·94
Total,	1065·69
A. Chlorine,	49·42
B. Phosphoric acid,	43·28

No. 3.

1. Urea,	644·62
2. Uric acid,	1·04
3. Fixed salts, earthy,	11·96
,, alkaline,	222·04
4. Difference,	118·89
Total,	998·55
A. Chlorine,	12·70
B. Phosphoric acid,	40·78

No. 4.

1. Urea,	554·00
2. Uric acid,	7·40
3. Fixed salts, earthy,	15·00
,, alkaline,	145·00
4. Difference,	96·60
Total,	818·00
A. Chlorine,	40·00
B. Phosphoric acid,	38·10

No. 5.

1. Urea,	630·00
2. Uric acid,	5·29
3. Fixed salts,	405·00
4. Difference,	289·91
Total,	1330·20
A. Chlorine,	79·20
B. Phosphoric acid,	23·72

Table G—*continued.*

No. 6.

	Grains per Day.
1. Urea,	484·30
2. Uric acid,	0·71
3. Fixed salts,	297·25
4. Difference,	268·99
Total,	1051·25
A. Chlorine,	36·08
B. Phosphoric acid,	29·43

Table H.—*Well-fed Vegetarians.*

No. 1.

1. Urea,	367·50
2. Uric acid,	0·50
3. Fixed salts, earthy,	20·30
,, alkaline,	364·00
4. Difference,	260·60
Total,	1012·90
A. Chlorine,	115·90
B. Phosphoric acid,	30·00

No. 2.

1. Urea,	578·81
2. Uric acid,	0·71
3. Fixed salts,	421·20
4. Difference,	236·15
Total,	1236·87
A. Sulphuric acid,	40·65
B. Phosphoric acid, with earths,	5·92
,, with alkalies,	26·55

No. 3.

1. Urea,	315·00
2. Uric acid,	1·69
3. Fixed salts,	261·00
4. Difference,	134·81
Total,	712·50
A. Sulphuric acid,	18·88
B. Phosphoric acid,	22·78

Table H—*continued.*

No. 4.

	Grains per Day.
1. Urea,	366·12
2. Uric acid,	2·48
3. Fixed salts,	249·20
4. Difference,	99·28
Total,	717·08
A. Sulphuric acid,	23·50
B. Phosphoric acid, with earths,	6·30
„ with alkalies,	21·24

No. 5.

1. Urea,	342·55
2. Uric acid [and Hippuric],	3·04
3. Fixed salts,	252·30
4. Difference,	177·71
Total,	775·60
A. Sulphuric acid,	21·00
B. Phosphoric acid, with earths,	3·46
„ with alkalies,	17·34

The preceding pages contain the facts which were observed during my investigation; in Part IV. I hope to draw my inferences from these facts, and to establish the general outlines of a Theory of Work applied to Man considered as a Machine, Mechanical and Mental.

(*To be continued.*)

Art. II.—*Report of Cases which occurred in the Parsonstown Workhouse Infirmary.* By Thomas Woods, M.D.

Two years ago I was placed in charge of the Parsonstown Workhouse Infirmary and Fever Hospital; and, as "a new broom sweeps clean," I commenced by endeavouring to classify, to a certain extent, the inmates. For instance, I found patients of the worst character, and affected with syphilis, mixed up with the other patients, both in the male and female wards. I procured for these separate apartments, in which they are treated altogether apart from the other paupers—thus avoiding both moral and physical contamination. I also found that no midwifery ward was appropriated for confinements, but that in the

general ward, amongst all the other cases of sickness, the accouchements took place. Decency and convenience alike suggested a separate room for these occasions, and I succeeded in obtaining it. Other lesser arrangements for classification added greatly to the comfort and usefulness of the hospital ; and I mention these particulars in order to direct the attention of medical officers, whose hospitals are similarly circumstanced, to the advantages I feel from them.

A workhouse hospital, for the number of patients it contains, is not the best field for interesting or instructive cases. The majority of its inmates are persons nearly approaching the natural term of life, the peculiar feature of whose existence is the entire indifference to the approach of death. Nevertheless, in the course of two years in every hospital some cases will occur which deserve recording. I have taken notes of some ; and, in the hope that they may be useful, I have determined to publish them.

The first case to which my attention was particularly directed was one of—

Prolapsus Ani.—With reference to this, the following is extracted from the note-book :—Biddy Grattan, aged six years, suffering from prolapsus ani for nearly two years. The prolapsed part cannot be returned ; it is about three inches in length, and the size of a lemon. The mucous membrane lining the tumour is congested. The child is emaciated and cadaverous. A large abscess is forming on the thigh. There is occasional diarrhœa, and no appetite.

The prolapsed rectum was rubbed over with nitrate of silver in substance. The protruded part became smaller, and the nurse was able to return it, but after a few hours it came down again. Strong nitric acid was then applied, by drawing a glass rod, dipped in the acid over the protruded bowel, a quarter of an inch wide on each side. The bowel was then returned, but it prolapsed the next day. The application of the nitric acid was repeated, a little more liberally ; the bowel was returned, and remained so for two days. The child got meat, and ate it. When the bowel protruded, it could be seen that where the nitric acid was applied the mucous membrane was removed. The nitric acid was again applied, the bowel returned, and it did not again come down. The acid was put on the prolapsed bowel by drawing it in the way first mentioned four times in the week ; and the child perfectly recovered. The abscess which was forming on the thigh disappeared by absorption ; and in about two weeks after, the bowel remained

permanently up. The child—who for the last two years was a most miserable-looking object, emaciated, suffering, and constantly confined to bed, with a poultice to the prolapsed rectum—gained a healthy and cheerful look, and became the fattest pauper in the house, with good use of her limbs. The cure is permanent.

Shortly after taking charge of the hospital I had a post-mortem examination on a man, aged 60, who had been under treatment before I saw him. His symptoms during life were, great dyspnœa, with occasional exacerbations, so that he appeared to be affected with croup in its most frightful form. He had also considerable dysphagia, was emaciated, and had cough. The post-mortem examination showed the following appearances :—Lungs healthy, pericardium attached to sternum by lymphy adhesions ; pleuræ, particularly that of the left side, adhering to each other ; about four ounces of fluid in pericardium ; heart a little larger than usual, and very soft, showing fatty degeneration under the microscope. The base of the aorta was very much enlarged ; and a little higher, and extending posteriorly, was a large aneurismal sac, partly filled with coagulum, pressing on the trachea and œsophagus. The latter was very thin, and on the inside of the tube was an ulcer, exactly opposite to where the aneurism pressed. The trachea was inflamed internally, and some false membrane was present. This might have caused the difficulty of breathing ; at least, together with the pressure, it might have given the peculiar croupy sound. The treatment had reference to laryngitis. I do not speak of anything here but the post-mortem examination, as it was with that I was principally concerned. The valves of the heart were sound, except that the edges were a little thickened. The lining membrane of the aorta was studded with atheromatous deposits.

Dr. Wallace, of Parsonstown, and Dr. D. B. Jacob, now of Maryborough, kindly made this and most of the following post-mortem examinations for me.

A case of Bright's disease of the kidneys was admitted into hospital on the 27th of February, 1857. The man (Casey) was thirty-five years old, and presented the following appearances on admission :—General anasarca to a great extent ; pale, phlegmatic, and scrofulous aspect. He had a clean tongue and a weak pulse. No apparent affection of heart or liver ; kidneys did not act well. Had suffered, a few years before, from scrofulous affection of the hip-joint. About six months ago he re-

ceived a hurt in the back; and about three months since, after exposure to wet and cold, the anasarca commenced. The man lived at an hotel as helper in the yard, and was constantly out in wet weather.

On admission, he was ordered a diuretic mixture of squills, acetate of potash, juniper, and digitalis, after having taken a few doses of gray powder.

March 1st. Continues in every respect as at first, except that ascites is now added to the other symptoms. The medicines were continued, and a blister applied to the right side. The urine, which is small in quantity, has a specific gravity of 1028, and is highly albuminous.

This man lived until November following, the disease not having been permanently benefited by any diuretics, tonics, or alteratives. The only medicine which gave relief was gallic acid, in doses of five grains three times a day, and a liniment of squills, digitalis, and soap liniment to the loins. The effect of the gallic acid, alternated with nitro-muriatic acid, was most remarkable. It not only seemed to make the anasarca disappear in some parts of the body, but it nearly entirely removed the albumen from the urine. Indeed, I fancied the man was recovering. However, he was suddenly attacked one day with rigors, which nothing could allay except very hot bricks applied to the loins. He then became exceedingly hot, and had afterwards immense perspirations; in fact, went through a long-continued aguish attack; and finally swelling all over his body from head to foot, became unconscious, and died in twelve hours.

The post-mortem examination showed fluid in the abdominal and pleural cavities; a little fluid in the pericardium. The heart was larger than natural, and softened; lungs healthy; liver healthy; kidneys about three times their natural size, and soft; cortical substance, particularly, morbidly developed, contrasting strongly in paleness of colour with the red tubular portion.

No other morbid appearance presented itself.

Lupus.—A man, Egan, aged 60, suffered from lupus on the face for three years. "It is now (March, 1857) about the size of a half-crown, and has been gradually extending round the circumference." Many applications, he says, have been tried without effect. I sprinkled over the raw surface *dried* sulphate of zinc. It caused great pain, and a slough formed, which fell off in about a week. Healthy granulations sprung up, and the sore completely healed. This sore remained healed for about

eighteen months, and again resumed its first state. The sulphate of zinc had now no beneficial effect. This case is still under treatment.

Heart Disease.—Mary Cleary, aged 15, admitted 8th November, 1857, with the following symptoms:—Great lividity of the face, and difficulty of breathing; general anasarca, small pulse, livid tongue; cough, with scanty, frothy expectoration. Examination with stethoscope showed congestion of the lungs. Heart's action tremulous, with double bruit de soufflet; in fact, it was impossible to distinguish the sounds of the heart, they were so confusedly mixed up with each other. Ascites was present, and the urine was scanty and high-coloured. She was ordered a mercurial alterative, followed by diuretics and sedatives, with some relief to the breathing and anasarcous swelling, but only for a short time. She died in a few days.

The post-mortem examination showed the entire surface of the body very dark-coloured from venous congestion. Fluid in peritoneal, pericardial, and pleural cavities. Blood intensely black. The heart being examined, the mitral valve was found greatly contracted, so that a goose-quill could scarcely be passed through it; and round its edges a hard border of cartilaginous consistency. It could hardly be thought that the circulation could be kept up through it even for a time. All the abdominal viscera were congested, especially the kidneys, which were quite black.

Chest Disease.—James White, aged 60, admitted to hospital in May, 1858. His symptoms on admission were, great difficulty of breathing, inability to lie on the left side, yellowish colour of face and eyes, emaciation, cough, with bloody expectoration; pulse quick and low; left side of the chest sounded well on percussion, and the respiration was normal. On the right side dulness on percussion up to the nipple of the breast, both anteriorly and posteriorly, with complete absence of respiration. All above this space there were mucous rales and gargouillement. The right side was larger than the left. He stated that he had been ill for some months, gradually getting worse, and was constantly exposed to wet and cold. This patient died in about a month; and a post-mortem examination showed, as might be expected, immense collections of fluid in the right pleural cavity, with adhesions stretching from the pulmonic to the costal pleura. Diaphragm on the right side thickened and cartilaginous. Right lung greatly compressed by the fluid in the pleura, and converted into a mass of tubercular matter, softened and cavernous towards the apex. Heart

healthy, except that the right ventricle was dilated. Left lung healthy ; liver enlarged and congested ; stomach healthy.

Judging from the appearance and the history of this case, it seemed to have commenced as pleuro-pneumonia, ending in tubercular abscess and effusion into the pleura.

Chronic Inflammation of the Brain, with Tubercular Tumour.—Larkin, aged forty-five years, had fever in 1857. Admitted shortly afterwards to Workhouse Infirmary, complaining principally of pain across the top of his head, running down to the right temple. He has (October, 1857) an anxious, suffering appearance, with a peculiar fixed eye, a contracted pupil, and slightly congested conjunctiva. Low pulse and pale countenance, except when flushed in pain ; stomach not out of order ; bowels regular, and good appetite. From the time of his admission all these symptoms continued, and gradually the left arm and leg became paralyzed; but the tongue was always protruded in a straight line, and was somewhat redder than natural. After some time, great pain was felt in the left arm and leg, which sedatives did not relieve, and latterly the same arm and leg became not only incapable of being moved, but the flexor muscles of both contracted, so that the hand was firmly pressed against the chin, and the heel against the buttock of the same side. There were twitching of the left side of the face, and during the last month of his life (July, 1858), great emaciation, and passing of fæces under him, not, however, unconsciously, but from inability to move. His speech was thick, but otherwise not altered, and his intellect was not at all affected.

Post-mortem examination showed the brain congested slightly, with an adhesion between the dura and the pia mater at the vertex, about one inch in diameter. In the lateral ventricles there were about two ounces of fluid, and at the base of the brain, attached to and beneath the crus cerebri of the right side, a tubercular mass, of about the size of a small hen-egg.

This man was apparently healthy before he had fever, with the exception of suffering from what were thought to be slight rheumatic pains.

Hydrocephalus.—Two children died in the Fever Hospital this month (October, 1858), after suffering from the usual symptoms of acute inflammation of the brain, commencing with shivering and fever, and ending in convulsions, coma, and death. In one case the hands and arms were rigidly flexed, and kept close to the chin, and in both the pupils were dilated and immovable.

Post-mortem examination showed great congestion of the

vessels of the pia mater, and, to a less extent, of the brain. In both cases there were adhesions between the dura and pia mater, and lymph effused at the vertex. In one case the lymph was spread out a good deal between the two membranes, and a great quantity was effused at the base, just behind the pons. In both cases there were about three ounces of fluid in the ventricles.

In one of these cases the symptom of continued flexion of the muscles of the arm, so that the hands were kept clenched and pressed against the chin, greatly resembled the same in the preceding (Larkin's) case. Although the disease under which the latter laboured was of a chronic character, and was the result of a tubercular development in the brain, it was not unlike the hydrocephalus in the effects produced.

The tumour in the one case, and the lymph in the other, were situated very much in the same place, and both might have produced the effusion into the ventricles, and the pressure on the same part of the brain might have occasioned the same symptoms; in fact, the mechanical effects, in both instances, were similar, although the diseases which produced them were different.

Œdema of the Glottis; Tracheotomy; and Death from Polypus of Heart.—Minnoge, aged 35, in hospital with secondary syphilis; phagedenic sores on several parts of the body. He was attacked some months ago in a similar manner, but apparently recovered under the use of iodide of iron. Since the sores reappeared, the iodide had no salutary effect. He was, therefore, ordered small doses of bichloride of mercury. He has small abscesses on the cheek and under the chin, and his general appearance is very cadaverous. In September (1857), after having been a second time in hospital, he complained of soreness of the throat, accompanied by hoarseness. There was nothing, however, to be seen in the threat. Greatly emaciated. The mercury was stopped, and iodide of iron again ordered. In a few days after (Sept. 30) he was attacked with great difficulty of breathing. No cough or discharge accompanied the dyspnœa After a few hours the breathing became so difficult that it was quite evident he must die if not relieved. I accordingly, at 10 o'clock P.M., opened the trachea, but before I had my preparations made for doing so, the unfortunate man had nearly ceased to breathe. He was unconscious when the operation was performed, and some time afterwards he said "he knew nothing from *the time he died* until he found himself surrounded by the persons at his bedside." The

breathing was quickly and efficiently performed through the tube in the trachea.

October 1st. Everything progressing favourably. Patient has taken some wine and broth during the night; breathes freely; continue the broth.

2nd. Tube required to be taken out to be cleaned, constantly filling with mucus. Slight bronchitis. Ordered a mixture of hydriodate of potash and tartar emetic in water.

3rd. Slept well, and is quite easy. Can breathe a little through the mouth. Still, slight bronchitis, but not increasing.

From this date until November 3rd he continued to progress favourably. No bronchitis, the first attack having disappeared in a few days. No particular unpleasant symptom of any kind. He can breathe through the mouth, but not sufficiently well to dispense with the trachea tube. He slips it out occasionally to clean it. He is, however, emaciated, although he takes a fair supply of nutriment. He has occasionally difficulty of breathing, although the tube is open.

On November 3, at 5 o'clock A M., he experienced great difficulty of breathing, to relieve which he removed the tube, thinking it was filled up. It had not, however, the desired effect. He felt great pain and weight about the region of the heart. The breathing became more oppressed, and, in spite of everything that could be done to relieve him, he expired in about fifteen minutes.

Post-mortem examination showed some œdema of the glottis. When the chest was opened, the lungs were found collapsed, and much spotted with carbonaceous deposit, but otherwise healthy. The heart was somewhat enlarged generally, and congested; the left ventricle thickened, and in the right ventricle a fibrinous polypus, about two inches long, adhered to the fleshy columns by a thin root. At first sight it appeared to be a clot, but examination showed its real character. It is probable that this polypus was the immediate cause of death, by falling against and stopping up the pulmonary artery.

Cancerous Degeneration.—Egan, aged 36. Admitted to hospital, September, 1857. Great emaciation and distention of abdomen; fluctuation in abdominal cavity, and a hard tumour occupying the epigastrium and right and left hypochondria; painful on pressure; constant retching; some diarrhœa; hectic fever, and great weakness. Died in two days.

Autopsy.—Large quantity of fluid in abdominal cavity. No signs of peritonitis. Liver enormously enlarged, presenting externally a knotty, indurated, and cancerous appearance,

extending three or four inches below the ribs, and pressing the stomach much beneath its natural situation; its internal structure, a pulpy, puriform mass throughout; a large cyst in left lobe, containing about four ounces of serous fluid; gall-bladder full of bile; liver weighed nine pounds. In the stomach, surrounding the pyloric orifice, was a cancerous mass, about the size of a large apple. Pancreas a cancerous mass; mesenteric glands enlarged and reddened; stomach and intestines blanched; kidneys healthy.

It is quite inexplicable how life could have been continued with such an almost universal destruction of all the organs for the preparation of nutriment.

Scrofulous Ophthalmia.—During the last two years there were many cases of scrofulous ophthalmia, although, judging from previous returns, not so many as formerly. Many of these cases occurred in eyes already possessed of nebulous corneæ.

The recent cases were in almost every instance cured by timely treatment. I generally gave three doses of calomel and rhubarb, one each night, and afterwards the syrup of iodide of iron, dropping into the eyes twice a day a solution of nitrate of silver, one grain to the ounce of water, and one-eighth of a grain of atropia. Sometimes the nitrate of silver solution was stronger. At the same time I used an external lotion, frequently applied, of acetate of lead, two grains to the ounce of water. These means, with blisters to the temple, generally made the patient well for the time. Nutritive diet was also found necessary; but the same individuals were constantly returning. However well they appeared to be when leaving the hospital, they were sure to come back again after a shorter or longer time, affected in the same way. I remarked in some children's cases that the scrofulous ophthalmia attacks were induced by any amelioration in porrigo of the scalp, to which many of them were subject, and that an aggravation of the latter relieved the ophthalmia.

I tried for these cases a solution of iodide of iron in cod-liver oil. It is a difficult matter to dissolve the iodide in the oil in the ordinary way, but I succeeded easily, by first making a solution of the iodide in chloroform, and then mixing the solution with the oil. I mention the use of this mixture chiefly for the purpose of mentioning this easy method of getting the solution for others who wish to try it, but I cannot say it did much service.

Since the foregoing cases were written, an inquiry has been

made by the Board of Guardians of this Union into what some few of the members consider a great extravagance. They have remarked that during the last two years, that is, since I got charge of the hospital, more extra diet in the shape of meat, wine, &c., has been given to the paupers than formerly, and they very properly called the attention of the Board generally to the subject, not with the object of depriving the patients of any necessary food, but that it might be seen whether the extra food was really required, or otherwise. The inquiry showed that more extra diet, and that to a considerable amount, was used; and in order to see what result was produced by this outlay, I examined the several entries in the books of the hospital. I knew that I ordered as closely as possible only as much food and stimulants as were necessary, in my opinion; but if the patients, before I went to the hospital, received much less, I should either have erred in judgment, or some result should appear different from what took place previously.

The examination of the books showed me I was not wrong. In the first place, the number of deaths in the year after I took charge fell from $12\frac{3}{5}$ per cent. to $10\frac{1}{5}$ per cent. of the hospital patients; and, secondly, the average daily number in hospital during the two last years, that is, the years they received more extra diet, was $8\frac{1}{2}$ less than in the previous two years, although there was a greater actual number of patients admitted—919 to 888; in other words, the patients were kept in hospital a much shorter period, amounting to $8\frac{1}{2}$ every day, with a consequent saving to the Union of £72 in diet and £30 in medicine. The extra diet did not cost nearly so much, so that the use of a more liberal diet, so far from being what at first sight appeared a loss, was in reality a great saving. And in reference to the fall of number of deaths in hospital, I have no doubt but that it also resulted from the use of a more liberal diet, for I examined the last Annual Report of the Poor Law Commissioners, and, taking the returns of all the Unions admitting up to and under 800 paupers, I find that in those where the average weekly expense is under 2*s.*, the average per-centage of deaths is nearly $9\frac{1}{2}$ on the general number admitted; while in those whose average weekly expense exceeds 2*s.*, it is only 7. So that a somewhat more liberal diet given to the paupers in workhouses is, I believe, no extravagance, but a saving, and at the same time a certain means of adding to the duration of life.

Art. III.—*Notes on Gunshot Injuries, with a Return and Detail of Cases from the Mutiny in India; and a Description of the Preparations illustrating this subject contained in the Museum at Fort Pitt.* By G. Williamson, Staff-Surgeon.

(*Continued from* vol. xxvii. p. 360.)

Class VIII.—Gunshot Wounds of the Upper Extremities.

Division 1.—*Simple Flesh Contusions and Wounds.*

Slight, 39; severe, 8. Total, 47.

Of these 30 have been sent to duty; 6 to modified duty; 6 invalided; and 5 remain undisposed of.

All were wounds by musket-ball, with the exception of 3 by round shot, 2 by shell, and 1 by slugs; 28 were wounded in the shoulder and arm, and 11 in the forearm and hand. The wounds were, with few exceptions, all healed, but in a number of cases there was more or less muscular contraction, and consequent loss of use and power in the arm, resulting from the patients' keeping the wounded limb in one particular position for months. In many cases the arm had become apparently perfectly useless, and in some cases even an incumbrance, so that I have been asked to remove it by amputation. This system of nursing their wounded limbs is brought about by trying at first to save themselves pain on any attempt at motion being made, and also from an idea that if they are invalided for a wound received in action they will be granted a higher pension than for any other disability.

In some the fingers were so contracted, and the nails so long, hard, and horny, resembling claws, that they had produced ulceration in the palm of the hand; to remedy this, the bath-man was supplied with a pair of strong scissors to keep the fingers of such patients in proper order.

In others the elbow-joint was contracted, distorted, and perfectly firm and rigid, and in a semi-bent position, and the fingers powerless from want of use.

The mode adopted for these contractions was simple, and consisted in forcible extension, the patient at the time being generally under the influence of chloroform; strong, straight, splints of different sizes were used; they were well padded, and covered with linen firmly sown down. Before applying the splint, the arm was bandaged with a flannel roller, and the splints, as stated, were strong and of a good breadth, and also of such length as to extend beyond the bones included in the contraction. For instance, when the elbow-joint is contracted, the splint should extend from the fingers beyond the shoulder

so as to afford plenty of leverage and purchase, as a very considerable degree of force has to be used. These splints were used almost daily on different patients, and with great success. The number of cases in which perfect cures were effected was great, and in others the condition of the limb was much improved. In none was there any serious injury or bad effect resulting from this process. Occasionally a considerable amount of inflammation and swelling follows, with vesication of the integuments; this always subsides under cold applications, and if the limb should again become contracted, the splint should be reapplied as soon as possible. In some cases a single application of the splint sufficed to straighten the contracted part, but more frequently the splint had to be applied several times, at intervals of a day or two. Sometimes the pain is so great that the patient cannot bear the application of the splint for more than a few hours. He ought, however, to be induced to keep it on as long as possible.

Of the 8 cases returned as severe, 3 were produced by round shot, causing severe laceration and destruction of the soft parts; 1 was by musket-ball through the biceps, along with 3 bayonet wounds of the shoulder, followed by sloughing; in 2 cases by a musket-ball through the arm, followed by sloughing; the last was a severe shell wound of the forearm.

Division 2.—*With Contusion and partial Fracture of Long Bones, including Fracture of the Clavicle and Scapula.*

Under this head 30 have been admitted, of which 13 have been sent to duty; 4 to modified duty; 5 invalided; 1 died of pyemia; and 7 remain undisposed of.

All were produced by musket-ball, with the exception of 1 by a piece of a shell. 14 were injuries of the scapula; 4 of the clavicle; 6 of the humerus; 3 of the radius; and 3 of the ulna.

Of the 14 cases of partial fracture of the scapula, 6 have been sent to duty; 2 to modified duty; 2 invalided; and 4 remain undisposed of. The 4 remaining may be included amongst the invalided, which makes a total of 6 discharged the service.

In some cases the ball entered through the fold of the axilla, and passed directly through the scapula. In others the ball entered above the clavicle, and passed through the superior angle of the scapula. In one case the ball injured both scapulæ, passing from side to side; in another the ball seemed to have gone between the scapula and ribs. Fractures of the

scapula are not dangerous unless they shatter the neck of the bone, or cause a fissure into the joint. Abscesses are apt to form under the fascia of the back, and require to be laid freely open by incision. Necrosis is not so frequent a result of gunshot fractures of the upper as of the lower extremity.

The following case is an example of abscesses forming in the neighbourhood of the scapula in gunshot wounds of this region:—

84th Regt.—Private Thomas Herlihy, aged 28, wounded October 6, 1857, at Lucknow, by a musket-ball which entered at the upper edge of the right scapula, about an inch below the spinous process, and passed out opposite to the spinous process of the fourth dorsal vertebra. Abscesses formed over the scapula, and were opened. The bone was injured, and several pieces of bone have come away at different times. All the wounds are now healed. He complains of inability to raise the arm from the shoulder-joint above the head, and also to carry his knapsack; his arm is, however, stout and muscular. September 3, 1858. Modified duty.

Of the 4 cases of partial fracture of the clavicle, 2 have been sent to duty; 1 invalided in consequence of loss of power in right arm; the fourth still remains undisposed of: in this case the aperture of entrance was healed on arrival here, but that of exit was still open, and led down to bare bone in the clavicle.

Of the 6 cases of partial fracture of the humerus, all occurred in the shaft of the bone; 1, as already stated, died of pyemia; 3 were sent to duty, and 2 invalided. The case of Private John Lloyd is interesting, as illustrating (Preparation No. 3629) the appearance of a partial fracture or indentation of a long bone, caused by a musket-ball, which was followed by necrosis of the part injured, while the remaining portion of the thickness of the shaft still continues intact; also the wound remaining open and suppurating, rendering the patient liable to blood-poisoning by the absorption of pus.

9th Lancers.—Private John Lloyd, wounded at Delhi, August 12, 1857, by a musket-ball in the right shoulder, which passed through on the inner side of the humerus, and made its exit on the posterior side of the arm. Both wounds healed before leaving India, but broke out on board ship.

August 2nd. The aperture of entrance is large, about an inch in diameter, and discharges freely. General health indifferent, and of a scorbutic tendency.

5th. He complained of dyspnœa; the wound looked slug-

gish; tongue coated; gums spongy; suffered from pains in the back and loins, especially in the right hypochondriac region.

7th. The dyspnœa had increased, and his cough was troublesome; the sputa were purulent, and very tenacious; on applying the stethoscope to the chest, mucous rales could be heard masking the heart's sounds; pain in the right side; pulse small and quick; epistaxis was so considerable as to weaken him greatly; slight diarrhœa.

9th. He still suffers from diarrhœa; very restless at night, seems to be in every respect worse.

10th. Complains greatly of pain in the right side; appetite very bad; suffers much from vomiting.

11th. Bowels not open to-day; his face looks anxious; eyes sunken; pulse very weak and quick; appetite entirely gone.

12th. Bowels not open for forty-eight hours; is getting very low; complains greatly of pain in the left side; expectoration thick and purulent.

13th. Died.

Sectio Cadaveris, twenty hours after.—External Appearances.—The aperture of entrance of ball, about an inch in diameter, was observed to be situated on the front of the right shoulder, and on inserting a probe it was found to proceed backwards, between the upper part of the shaft of the humerus and the large vessels and nerves of the axilla, none of which were injured, and passed as far back as the integuments on the posterior fold of the axilla, where the aperture of exit was seen to be closed. The track of the ball was of a dark colour, and in a sloughing state, and contained three small pieces of necrosed bone. A portion of the shaft of the humerus, on its inner side, about two inches below its tuberosity, was bare, and denuded of periosteum, and carious. There is also a depression in this situation from loss of bony structure, where the ball had caused a partial fracture, No. 3629. *Cranium.*—Membranes of brain much congested; the brain otherwise healthy, weight 3 lbs. *Thorax.*—There were five ounces of serum in the pericardium; heart healthy, weight 11 oz. The mucous membrane of the larynx, trachea, and bronchial tubes, as far as it could be traced into the lungs, of a deep purple colour, and highly congested; the right pleural cavity free from adhesions; the left pleural cavity slightly connected to the walls of the chest from recently effused lymph, a thin coating of which covered the inferior lobe. On making a section of the lungs, they were found œdematous; several small sacs, the size of a bean, containing deposits of pus, were found in the structure of the inferior lobe of the left lung, and the

surrounding substance was somewhat condensed; weight 4 lbs. 4 oz. *Abdomen.*—The liver was much enlarged, and of a dark colour, the structure being otherwise healthy; the gall-bladder was filled with a thin watery bile; weight 6 lbs. 14 oz. The spleen was also greatly enlarged, the structure being soft and easily broken up, weight 4 lbs. 4 oz. The kidneys were very much enlarged, and presented the appearance of granular degeneration in the second stage, some of the tubular portions having disappeared; weight, right, 14 oz., left, 13½ oz. The stomach and intestines were slightly congested, and of a dark slate colour from a carbonaceous deposit.

Of the 3 cases of partial fracture of the ulna, 2 have been sent to duty, and 1 to modified duty; 2 were in the shaft of the bone, 1 by a piece of shell, close to the elbow-joint, resulting in anchylosis.

61st Regt.—Edwin Carter, aged 37, wounded at Delhi, September 15, 1857, by a piece of shell which struck the inner side of the right elbow-joint, a little below the olecranon, injuring the bone in the vicinity of the joint, without producing rupture of the skin; considerable pain and swelling of the joint ensued, which were relieved by incisions giving exit to a large quantity of pus. One large piece of bone came away. The wound did not heal for five months.

September 5th. Wound healed; forearm in a semi-bent position, and elbow-joint completely anchylosed.

October, 1858. Modified duty.

One case of partial fracture of the radius was sent to duty.

Division 3.—*Simple Fracture of the Long Bones by Contusion from Round Shot.*

2 have been admitted, and 2 invalided; 1 was a case of simple fracture of the ulna, with contusion of the wrist, followed by abscesses in the hand; the other is a case of fracture of the clavicle, still ununited, with loss of pulsation and diminished temperature in the injured arm.

32nd Regt.—Private James Bailey, wounded at Lucknow, September 2, 1857, by a round shot, on the left side of the chest, breaking the first and second ribs, and centre of left clavicle, also contusing the shoulder.

July 13, 1858. The fracture of the clavicle is still ununited; has lost power in the arm, and cannot use the fingers; no pulse can be felt at the wrist, and the left arm is of a lower temperature than the right.

August 5, 1858. Invalided.

Division 4.— *With Compound Fracture of the Humerus.*

17 have been admitted under this head. 3 have been sent to modified duty; 13 have been invalided; and 1 remains undisposed of. 1 was caused by a piece of a shell, and the others by musket-ball. All were fractured in the shaft of the bone, with two exceptions; 1 of them was through the head of the humerus, anchylosis of the shoulder-joint resulted; the other was through the surgical neck of the bone; 1 only remained unhealed on arrival here.

In almost every case of fracture implicating the humerus or bones of the forearm, there was great muscular contraction and rigidity of the tendons and ligaments around the elbow-joint, and the fingers were bent and contracted, requiring forcible extension to ameliorate their condition, and in some to effect a cure.

In compound fractures of the upper extremity primary amputation is never resorted to except in very severe and hopeless cases of gunshot wounds. The following is a case of complete fracture of the humerus, with the ball lodged in the bone below the brachial artery.

53rd Regt.—Private Patrick Radding, aged 29, wounded, November 1, 1857, by a musket-ball, which entered on the outer side of the left humerus, about two inches above the elbow, and appears to have passed through the bone to the inner side, where it still remains imbedded in the bone; several pieces of bone have come away.

June 11, 1858. There is now a firm, hard substance on the inner side under the brachial artery, and he cannot straighten the arm in consequence of contraction of the biceps; there is a deep depression at the entrance of the ball. As the ball did not cause much annoyance, it was not considered advisable to cut down upon it, and remove it, particularly as the man was averse to the operation.

August 26th, 1858. Invalided.

The next is a case of fracture of the surgical neck of the humerus, the shoulder-joint remaining sound.

78th Regt.—Private Geo. Mathews, wounded at Lucknow, September 25, 1857, by a musket-ball, which entered in front of the left shoulder, through the anterior fold of the axilla passed directly backwards, and came out at the posterior surface of the arm at the posterior margin of the deltoid behind the joint, causing a comminuted fracture at the surgical neck of the humerus; profuse suppuration ensued; several fragments of bone have come away.

July 11th. Apertures of entrance and exit of ball remain open; small pieces of bare bone can be felt; there is some enlargement of the bone at the seat of injury from deposition of new bone. The shoulder-joint is apparently sound, although he cannot move the arm, but he has perfect use of the forearm and hand.

The following is a case where the ball passed through the head of the humerus, followed by abscesses and anchylosis of the shoulder-joint.

75th Regt.—Corporal John Ryan, aged 31, wounded at Delhi, August 12, 1857, by a musket-ball, which entered the head of the left humerus, and passed out about two inches from the spinous process of the vertebra, between the seventh and eighth ribs; stated that he spat up blood for three weeks after; abscesses formed, and numerous pieces of bone came away from the shoulder.

July 20th, 1858. Wound healed; shoulder-joint anchylosed. It is not certain whether the lung was wounded or not.

October 6, 1858. Invalided.

The following is a case of ununited fracture of the humerus, from India, in an officer.

Major M. had his right humerus severely shattered in its middle third by a musket-ball, in June, 1858, at Juydespore; the shot was fired by a Sepoy who was within a few yards of him. Several pieces of bone came away at the time, and since then a considerable number of small pieces.

March, 1859. There is now a space of about two inches between the ends of the bones, no union having taken place, and there is a slight discharge from a sinus which remains open. There still appear to be some necrosed portions of bone to come away; and it is not thought advisable at the present time to perform any operation with the view of effecting union.

No. 2924. Shows deficiency of a large portion of the lower part of the shaft of the humerus, from necrosis, in consequence of gunshot wound.

No. 2925. Humerus, the shaft of which has been shattered by gunshot, and firmly consolidated by osseous matter; a large splinter, which was completely detached, has become perfectly united to the fragments. From Patrick Waldron, 87th Regt., who received a fracture of the arm in the Burmese war. The ball entered between the outer edge of the biceps and insertion of the deltoid, passed through the os humeri and triceps, and made its exit on the inner side of the arm. The power of the limb was never restored; he subsequently died of apoplexy. When the arm was examined after death the external cuta-

neous nerve was found to have been wounded, and at the injured part was converted into a cartilaginous substance.

b.—With Compound Fracture of the Radius.

18 have been admitted. 1 has been sent to duty; 2 to modified duty; 14 invalided. 1 was produced by a piece of a shell, close to the elbow-joint, followed by anchylosis; and the others by musket-ball; only 1 remained unhealed.

In some of these cases there was great comminution of bone and loss of substance. In some instances as much as two and three inches of the shaft were deficient, and in all there was more or less contraction of the fingers, and consequent impaired use of the hand and forearm, so as to render the men unfit for service. In 2 cases the fracture was close to the wrist-joint; in 1 case the fracture remained ununited, although the ends of the bone were in contact; in one the ball was supposed to be lodged and impacted in the bone, and was cut down upon, but could not be found.

The following is a case of fracture of the radius, with probable injury of the median nerve.

88th Regt.—Private Robert Buchanan, aged 20, wounded November 26, 1857, by a musket-ball, which entered on the anterior suface of the arm, about three inches below the elbow-joint, and passed out on the posterior surface, opposite to the place of entrance; the radius was fractured, and several pieces of bone have come away; the median nerve has also, probably, been wounded.

July 11, 1858. He has now completely lost the power of motion and sensation in the hand, which hangs powerless by the side, and the lower extremity of the ulna projects as if the hand was partly dislocated.

July 31, 1858. Invalided.

The next case is one of severe comminution, with loss of about two and a half inches of the shaft of the bone.

60th Rifles (1st Battalion).—Private John Kerr, aged 19, wounded at Delhi, June 14, 1857, by a musket-ball, causing a compound comminuted fracture of the right radius about its middle, doing also much injury to the flexor tendons; several pieces of bone were taken away at the time.

July 20, 1858. Wound healed; there is loss of a portion of the shaft of the radius for about two and a half inches; he cannot use the fingers, or pronate or supinate the hand.

July 21, 1858. Invalided.

The following is a case of fracture with the ball lodged between the comminuted portions of the radius.

75th Regiment.—Private Wm. Clarke, wounded at Delhi, September 14, 1857, by a musket-ball, which struck the outer side of the forearm at it upper third, fracturing the radius, and lodged.

March 17, 1858. An incision was made and several loose pieces of bone taken away, but the ball could not be found.

July 20th. Entrance wound of ball healed; the incision made for extraction of the ball still remains open; cannot pronate and supinate the hand, and has lost the power of the arm.

October 16, 1858. Invalided.

No. 2926. Radius, the shaft of which has been fractured by a gunshot, and reunited by new osseous matter, and firmly consolidated thereby to the ulna.

c.— With Compound Fracture of the Ulna.

7 have been admitted, of whom 2 have been sent to duty; 1 to modified duty; and 3 invalided; and 1 remains. All were by musket-ball, and were healed on arrival. In 1 case ligature of the radial artery had been performed on account of sloughing, which is detailed under "Ligature of Arteries."

d.— With Compound Fracture of the Radius and Ulna.

3 have been admitted. 1 sent to duty, and 2 invalided. In 1 of these cases the fracture of both bones was produced by a piece of telegraph rod, which the mutineers fired when they became short of ammunition. The fracture was in the lower third near the wrist. In the other case the fracture was caused by the soldier falling from his horse in action.

Division 5.—*Penetrating, perforating, or lacerating the several Structures of the Carpus and Metacarpus.*

Under this head there have been 26 admissions, of which 5 have been sent to duty; 7 to modified duty; and 13 invalided; 1 remains undisposed of. The proportion invalided in these injuries is great, and shows their severity. In some cases the ball completely perforated the carpus or metacarpus; in others it struck the bone in a slanting direction, and passed out, producing more or less injury to the bones, tendons, and ligaments, so that in almost every case there was contraction and rigidity of parts, with distortion, want of power, and otherwise impaired use of the hand and fingers resulting. Whenever it was requisite, forcible extension was resorted to. In two cases the wrist-joint was anchylosed.

In the following case the ball still remains in the fleshy part between the thumb and fore-finger, and it was not thought

expedient to cut down upon it and remove it, in consequence of its not producing much inconvenience, and also from the patient objecting to the operation, fearing that he might be attacked with lock-jaw, and especially as he was otherwise strong and healthy.

60th Rifles (1st Battalion).—Corporal Denis Bergin, aged 30, wounded at Delhi, June 15, 1857, by a musket-ball which entered on the posterior surface of the left arm, about two inches above the wrist, passed between the radius and ulna, and made its exit on the anterior surface of the forearm. On July 14th he received another wound from a musket-ball, in the left hand; the ball entered on the posterior surface between the thumb and forefinger, and still remains in.

July 20, 1858. Wounds healed; has lost considerable power of the finger, and the wrist-joint is anchylosed; the ball is felt between the thumb and forefinger.

21st. Invalided.

84th Regt.—Private Thomas Rushworth, aged 28, wounded at Lucknow, November 17, 1857, by a musket-ball, in the left wrist, which entered on the front nearly in the centre, passed directly through, and made its exit on the posterior side; several pieces of the carpal bones were removed at the time, and great swelling of the hand ensued.

August 16, 1858. Wounds healed; there is anchylosis of the wrist-joint, with impaired use of the hand.

September 2, 1858. Sent to modified duty.

Division 6.—*Dividing or lacerating the several Structures of the Carpus and Metacarpus.*

9 have been admitted; 4 have been sent to duty; 2 invalided; and 3 remain.

Class IX.—Gunshot Wounds of the Lower Extremities.

Division 1.—*Simple Flesh Contusions and Wounds.*

Slight, 87; severe, 13; total, 100.

Of the total 100 cases, 63 have been sent to duty; 6 to modified duty; 13 invalided; and 18 remain undisposed of.

On comparing the number of gunshot wounds of the upper with that of the lower extremities, it will be noticed that they are very nearly the same, viz., 159 in the upper, and 162 in the lower. There is, however, a considerable difference as to the number of flesh gunshot wounds, there being 100 in the lower, and only 47 in the upper extremities. 5 were shell wounds; 8 by grape-shot; 1 by a brick-bat; 1 by a rifle-ball; and the

remainder by musket-ball. 12 were wounded in the hip; 26 in the thigh: and 62 in the leg. In 2 cases balls were extricated from the fleshy part of the thigh, at Fort Pitt; and in another case from the perineum, immediately over the bulb of the urethra, the ball having entered on the outer side of the thigh, opposite the trochanter major; in 3 cases the wounds were very close to the femoral artery; and in 1 the ball still remains in the thigh. This man is returned under "Amputation of the Finger," but the other wound is interesting, and must be noticed in this place: the ball must have grazed the femoral artery and vein; on inserting a probe into the fistulous opening, the ball could be distinctly felt deep behind the artery. Of the 13 severe cases, 1 was by a ball which is lodged in the tuberosity of the ischium; 2 were from round shot in the thigh, followed by sloughing: several were ball and shell wounds in the thigh, followed by sloughing; 1 was by a rifle-ball in the thigh; 1 by a ball in the thigh close to the femoral artery, injuring the sciatic nerve; and in 5 cases the wounds were from balls in the fleshy parts of the leg, followed by sloughing.

In a number of cases there was great contraction and rigidity of the hamstring muscles and ligaments around the knee-joint, also in the muscles of the calf, and around the ankle-joint, requiring forcible extension. Many of them, on arrival, walked with crutches, the leg suspended in slings, and the foot pushed out behind; the crutches were taken from them, and the limbs placed in splints and extended; and with the same results as in the upper extremity, the greater number being much improved in condition, and several perfectly cured.

The very indolent character of open sores after gunshot wounds is worthy of remark. The men were apparently in good health, had lived well both in India and on board ship, and were generally untainted with scurvy; still, the ulcers resisted every mode of treatment,—lotions of every description, blisters, strapping, filling them with wax, &c.,—nothing would induce granulations, or a healthy action.

The following is a case where a ball entered posteriorly in the centre of the buttocks, and lodged in or near the pubes; the ball could not be felt by the finger from the perineum, but it was detected by the long probe through the aperture in the hip.

10th Regt.—Private John Ferguson, wounded at Benares, June 4, 1857, by a musket-ball, which entered the centre of the right buttock, and passed forwards and downwards, and is now lodged in or near the ramus of the pubes.

July 13th. The aperture of entrance on the centre of the right hip is still open, and the ordinary probe goes in its entire length without feeling any foreign body; the long probe can detect the ball lying near the pubes.

July 17, 1858. Invalided.

In the following case the ball must have grazed, or at least passed very close to the femoral artery, and lodged deep beneath it.

84th Regt.—Private Thomas Bulger, aged 33, wounded at Cawnpore, November 16, 1857, by a musket-ball, which struck him on the left hand, fracturing the first, second, and third fingers, and then passed through the anterior and outer part of the upper third of the left thigh from behind forwards. Wounded by a second musket-ball in the anterior aspect of the left thigh, the ball entering about three inches below Poupart's ligament, close to the course of the femoral artery, where it lodged. Amputation of the fore and middle fingers, between the first and second phalanges, was performed four days after.

August 16th. Covering of stumps of fingers good; motions of ring and little fingers impaired; perforating wound of thigh healed. The wound where the ball is lodged still remains open; there is only a small sinus, through which the ball can be felt, situated close to the inner side of the femoral vein; attempts were made to dilate the wound by tents, as it would have been rather hazardous to cut down upon it, being so very near the femoral artery and vein; the man objected strongly to have an incision made for its removal, and, as the wound had closed, he was discharged the service, October 15, 1858, on account of loss of fingers by amputation, under which head he is included in the Return, although noticed in this place for the wound in the thigh.

Division 2.—*With Contusion and partial Fracture of Long-Bones, and of the Bones of the Pelvis, in their relation to the Lower Extremities.*

28 have been admitted, of whom 8 have been sent to duty, 4 to modified duty, 10 invalided, and 6 remain undisposed of. 5 were partial fractures of the ilium, 3 in the thigh, 14 in the tibia, and 5 in the fibula; 13 were caused by ball, 3 by grape, 1 by round-shot, and 1 by shell. Of the 5 cases of fracture of the ilium, several were very severe; in 2 the balls were supposed still to remain impacted in the ilium, but causing no inconvenience; in 1 a portion of bone, 2 inches in diameter, came away by necrosis; of the 3 cases of wounds

in the thigh, in 2 of them there was only slight injury to the femur; in the third case the ball entered in the popliteal space, and anchylosis of the knee-joint resulted; of the 14 wounded in the leg, there was 1 where the ball fractured the tibia, with, probably, a split into the ankle-joint; in 1 case sloughing followed, requiring ligature of the posterior tibial artery; in 1 a round-shot tore the soft parts extensively; and in 1 the greater portion of the tibia became necrosed, and was taken away. In a number of cases there was considerable contraction of the knee and leg.

The following is a case where a ball is said to be firmly impacted in the ilium.

10th Regt.—Private Robert Sherlock, wounded at Benares, June 4, 1857, by a musket-ball, which entered about two inches below the crest of the ilium, and is firmly impacted in the bone, as stated in the document. At a consultation held on November 17, 1857, at Dinapore, it was decided that at present an operation was not advisable.

July 12, 1858. Wound healed; ball cannot be felt through the soft parts, and it causes no uneasiness or pain to the man.

July 13, 1858. Sent to duty.

The next is a case of fracture of the ilium by grape-shot, followed by necrosis.

Preparation No. 3627 is the portion of the external table of the ilium, about two inches in diameter, which was removed from the following subject.

88th Regt.—Private Martin Ford, aged 20, wounded at Cawnpore, November 26, 1857, by a grape-shot, on the crest of the right ilium, immediately above the anterior and superior spinous process, where it lodged, and was extracted two days after; several pieces of necrosed bones have come away.

October 10, 1858. Wounds healed; there is a deep adherent cicatrix over the outer side of the hip, with stiffness and contraction of muscles.

October 15, 1858. Modified duty.

The following case is an example of a wound near a joint, producing such severe inflammation of the ligamentous structure and of the joint itself, as to cause anchylosis. This case was placed under this Division, as it was thought probable there was more or less injury to the bone, although it was stated in the report of the case that there was not any fracture.

60th Rifles (1st Battalion).—Private Edmund Miller, wounded at Delhi, September 14, 1857, by a musket-ball, which struck the centre of the popliteal space, but, as far as could be observed at the time, not entering the joint or caus-

ing any fracture; great swelling and effusion occurred, with considerable disturbance, and excessive pain on moving the limb, or even the mildest manipulation. The ball was extracted, with some difficulty, from the aperture of entrance, which rapidly healed, and again broke out.

July 20, 1858. Left knee anchylosed, but he is still able to walk.

July 22, 1858. Invalided.

The following case shows extensive necrosis of the tibia, which is a frequent result of injury or partial fracture of this bone.

75th Regt.—Private George Steptoe, wounded at Delhi, September 14, 1857, by a musket-ball in the left leg, which entered immediately below the tubercle of the tibia, and passed out on the outer side of the leg at its upper third; several pieces of bone came away from both wounds.

July 20, 1858. Exit wound healed, entrance aperture still open, and several other sinuses leading down to necrosed bone; tibia enlarged; integument livid and discoloured.

26th. Two pieces of bone, about two inches in length, were extracted from the centre of the tibia, at Fort Pitt.

Undisposed of.

The last case in this Division is an example of a longitudinal fracture into the ankle-joint, followed by anchylosis.

5th Regt.—Private William Burrowes, wounded at Juydespore, August 12, 1857, by a spent musket-ball, on the inner side of the right leg, about one inch above the ankle-joint; it was extracted immediately after by pulling out the sock and trowsers, which had been carried in with it; the tibia seems to have been splintered longitudinally into the ankle-joint.

September 26, 1858. Wound healed; ankle-joint anchylosed; there is a slight depression along the front of the lower third of the tibia; he walks lame.

November 21, 1858. Invalided.

Division 3.—*With Simple Fracture of Long Bones by contusion of Round Shot.*

None admitted.

Division 4.—*With Compound Fracture of Femur.*

8 have been admitted from India, of whom 2 have been sent to modified duty, 5 invalided, and 1 died. 1 double fracture, —one fracture being at the upper third, and one at the middle third; fracture at the upper third in 4; at the middle third in 3. By musket-ball in 7; by round-shot in 1; musket-ball

lodged in 3; not lodged in 5; wound healed on arrival in 5; unhealed on arrival in 3. Limb three inches shorter in 3, two and a half inches shorter in 1, one and a half inches shorter in 2, and one inch shorter in 2 instances.

Besides these 8 cases there is 1 (Private M'Crea[a]) of a simple fracture of the lower third of the femur, by round-shot, received in action, where amputation of the leg was performed at the tubercle of the tibia.

It is taught by most military surgeons that, as a rule, immediate amputation should be performed in all compound comminuted fractures of the femur; and that by attempting to save limbs more patients have lost their lives. It is also recommended in all cases of gunshot fractures of the middle and lower thirds of the femur, but especially in the middle third, that amputation should be performed; but in the same injury in the upper third, the limb should be preserved, as it has been found that amputation in the upper third of the thigh is almost certainly fatal, so that such a severe operation is not considered advisable when the prospect of success is so small, and by retaining the limb the patient is much more comfortable, with equal chances of saving his life. It may be mentioned that one case of amputation of the upper third of the thigh arrived from India: it was so high up that the stump could not be retained in the bucket of the artificial limb.

It appears from the result of the Schleswig Holstein war, that a considerable number of these cases were preserved with very useful limbs. The number which have arrived from India is very large in proportion, viz., 8 cases of compound comminuted fracture of the femur to the total wounded, 603. Of 2296 discharged the service at Chatham, in consequence of wounds received in the Crimean war, there were only 8 recoveries with the limb on. The success of these cases from India may, in part, be attributed by some surgeons to the ball of the old musket being smaller, and not producing such a severe fracture as that used by the Russians during the late war, but more to the dooley as a means of conveyance, and in part to the army having been better supplied with good food, clothing, &c.

Generally cases of gunshot wounds progress more favourably in hot than in very cold climates, especially when great attention is paid to cleanliness. These fractures are, however, in my opinion, as severe as could be caused by any Russian

[a] The history of this case will be found under "Amputation of the Leg."

ball, viz., in M'Carter's case, produced by round-shot, and Carty's, where there was a double fracture. And, looking at these cases, it appears to be still an open question as to the necessity of immediate amputation in all cases of gun-shot fractures of the femur. When the fracture is close to the knee, or if the bone is split into the joint, amputation will be necessary; when the bone is simply fractured, and not splintered to any great extent, the ball having traversed the limb, it seems to be advisable, under favourable circumstances as to after-treatment, to try and save the limb at whatever part of the bone the fracture has taken place; when the femur is more extensively shattered, recourse must, of necessity, be had to amputation. A great deal must also depend upon the kind of projectile: when from round-shot, there is generally great comminution, and little hope can be entertained of saving the limb; but recoveries under such unfavourable circumstances do occasionally take place, as illustrated by the case of M'Carter, 64th Regiment. The fact that three men were sent to modified duty shows that they must have retained very useful limbs, so as to be able to carry messages and to act as orderlies: more than three might have been sent, as far as the condition of the leg was concerned.

The case of Carty, 64th Regiment, is interesting as showing a double fracture, both firmly united, and the ball supposed to be lodged.

Ashworth had recovered with such a strong useful leg, that, if it had not been for the shortening of the limb, he might have gone to his duty in the ranks.

Hewitt had also a very useful limb, and would have been sent to modified duty if he had not been close upon ten years' service, when he could have claimed his discharge.

Collins also retained a very useful limb, and could walk a long distance with a stick; he was discharged by Horse Guards' order, after having been sent to modified duty.

Burke has also a very good limb, and is at modified duty.

Walmsley (death) is very interesting, as showing strong bony union at the trochanter, with the ball lodged between the fractured ends.

Hunter is able to walk about with very little lameness, and the sinus discharges very little. There appears to be a very extensive deposition of new bone, with thickening of the lower third of the femur, and central necrosis; the new bone extends so low as to encroach somewhat on the motions of the knee.

They were all, as far as can be ascertained, treated by the long splint, with the exception of M'Carter and Burke, who used M'Intyre's splint for some time.

The advantage of the dooley over the best constructed ambulance, for the conveyance of sick and wounded over rough roads during active military operations, is well shown in the result of these cases of compound comminuted fracture of the femur.

Why should not Government enlist and organize in India a corps of trained dooley-bearers for service with our regiments in every part of the world? All regiments in India have a certain proportion of dooleys and dooley-bearers attached to them permanently in the time of peace, and when on the line of march and on active service they are, of course, increased.

I would propose that one dooley, with the usual number of bearers, be part of the establishment of every regiment in time of peace; and the men, when not required with the dooley, could be very usefully employed about the barrack on fatigue duty, &c.

The best dooley-bearers generally come from the country around Cawnpore, and the lower provinces. It would not be advisable to take such men to the cold climate of England, but in India the extent of country is so great that we can choose men from a country still colder than our own. The little sturdy hill men, the "Ghoorkas," for instance, or (if they would not) any other hill tribes, might be trained into a most useful and serviceable corps, and would enable us to do away, in a great measure, with the sick ambulances; the dooley being only used for the worst cases. This appears to me to be a measure which could be carried out without much difficulty, if sufficient inducements as to pay, good treatment when in the service, and the promise of a pension when discharged, and sent back to their homes in India, were held out to them.

In the following case there was extensive laceration of the soft parts, and severe comminution of bone; large portions of necrosed bones were removed. The wound had never entirely healed; the limb was two inches and a quarter shorter than the other.

64th Regt.—Private William M'Carter, aged 26, nine years' service, was wounded on February 8, 1857, at Kooshat, in Persia, by a spent ball, which struck the outer and anterior aspect of the middle third of the right thigh, producing a severe comminuted fracture of the femur, with extensive laceration of the soft parts. The thigh was protected temporarily by a

single straight splint on the outside. On the following morning the limb was put on a M'Intyre's splint, with two side splints in addition; considerable inflammation followed, with great swelling and profuse discharge, and constitutional disturbance. He remained in bed until May 6th, when he embarked for Bombay, when the wound was still discharging a good deal.

Four large and several smaller pieces of bone have come away at different times; abscesses have frequently formed on the posterior aspect of the thigh; and on one occasion a large piece of bone was removed from it.

Fort Pitt, May 4, 1858. General health good; fracture firmly united, but the bone is curved outwards; the original wound has never entirely closed, and there are now two sinuses leading down to bare bone.

18th. The necrosed portion of bone, about one inch in length, was removed; the limb was two and a quarter inches shorter than its fellow; on standing up, the great toe and next one touched the ground, and the heel is raised three and a quarter inches.

29th. Wounds nearly healed; can bear his weight upon the limb, and walk about, with the aid of a stick, without crutches. On the whole, he has a very useful limb, much preferable to any artificial one.

30th. Invalided.

In the next case there was a double fracture, both firmly united, the ball still remaining in; the limb is two and a half inches shortened; still, he walks so well that he has been sent to modified duty.

64th Regt.—Private Patrick Carty, aged 28, wounded at Lucknow by a musket-ball, which struck him, while in the erect position, on the right thigh, on its posterior surface, about five inches below the superior spinous process of the ilium; the ball, it is stated, still remains in the thigh. After being wounded, he remained at the village of Amoo for three days, with his thigh bound up tightly (he states) with short splints placed round the limb; on the fourth day he was removed to hospital at Cawnpore. Eighteen days after the wound was inflicted, he had a long splint put on, and was placed on a hard mattress; he remained in hospital at Cawnpore twenty-four days, and was then carried to Allahabad, the journey occupying eight days; he remained in hospital at Allahabad for one month, and was then conveyed to Calcutta in a steam-vessel; he remained in hospital at Calcutta for two months and eight days; the splint was removed after he had been in hospital at Calcutta one month; and on his embarking for England, on January 8, 1858,

he was able to move about tolerably well with the aid of crutches; he states that during the voyage home he gained strength in the limb very rapidly.

June 25, 1858. The femur appears to have been fractured in two places: the upper fracture is just below the spot where the ball entered, a projection of a fractured end of the bone is distinctly felt there, and another projection of a fractured end of bone is felt at the outer and middle part of the thigh; there is also a small tumour on the outer side of the thigh, below the strong fascia, which is only movable when the muscles are relaxed: this may, probably, be the ball; the limb is shortened to the extent of two and a half inches; he can now walk for a short distance with very little lameness, without crutches or stick, and states that he does not suffer any pain unless he gets on uneven ground; his general health is good.

September 6, 1858. Sent to modified duty.

December 22nd. Invalided.

In the two following cases the fracture was in the upper third; the broken limbs were one and a half inches shortened, and they had become nearly as strong as the other legs.

53rd Regt.—Private John Ashworth, aged 29, wounded November 1, 1857, by a musket-ball, which entered two inches below the great trochanter, and emerged in the front of the thigh at its upper third, having in its course fractured the bone; the limb is one and a half inches shorter than the other.

July 14, 1858. Wounds healed; complains of weakness in the limb, but is able to walk about without the assistance of a stick.

September 6th. Sent to modified duty.

52nd Regt,—Private Joseph Hewitt, aged 27, wounded July 12th, at Goodispore, by a musket-ball, which entered on the anterior aspect of the upper third of the left thigh, and fractured the femur, the ball was cut out in the lower part of the gluteus muscles six weeks after.

July 20, 1858. Wound healed; the fractured ends of the bones overlap; the leg is now an inch and a half shorter than the other, and he cannot put his heel to the ground. It is a good cure, and he still retains a very useful limb; no pieces of bone came away; long splint used.

22nd. Invalided.

The following is a case of fracture of the upper third; the ends of the bones overlap considerably; the limb is shortened two and a half inches, and the ball lodged.

75th Regt.—Private Edward Collins, wounded at Delhi, June 8, 1857, by a musket-ball, which entered the upper and

outer side of the right thigh, and lodged, fracturing the femur; ball extracted; a piece of bone came away.

July 20th. Wound healed; right leg about two and a half inches shorter than left; femur bent; fractured ends of bone overlap, and there is abundant deposition of new bone; the long splint was used. Has a good useful limb, and can walk a long distance.

September 6, 1858. Sent to modified duty.

October 6th, 1858. Invalided by an order from the Horse Guards.

In the next case the fracture is between the middle and lower thirds of the femur; limb shortened one and a half inches.

53rd Regt.—Private James Burke, wounded at Lucknow, November 16, 1857, by a musket-ball, which entered the front of the left thigh, about the junction of the lower with the middle third, fracturing the femur, and passing inwards and backwards; it was cut out two days after in the inner side of the thigh; no piece of bone came away. Was sent back to Cawnpore in a dooley, and his leg retained in the long splint; went from Cawnpore, in a hackney, to Allahabad, on the 2nd December, and arrived there on the 10th, and shortly after the limb was put on a double-inclined plane, and finally upon the long splint; was unable to bear his weight on the limb until April, 1858.

August 16, 1858. Wounds healed; the fracture is united, but the ends overlap on the outer side, and the left leg is about one and a half inches shorter than the right; he can bend the knee-joint, and has a very useful limb, being able to walk tolerably well.

September 6, 1858. Sent to modified duty.

The following fatal case shows that it is often impossible to find out by what description of missile the wound is produced, as the document stated that the fracture was caused by a portion of shell, and a ball is seen to be lodged between the united ends of the bones. It also appears that there were two apertures, one of entrance and one of exit; so that he must have been wounded by two projectiles,—one, the ball, lodged; and the other, probably a portion of shell, perforated the limb. The preparation also shows the state of the parts twelve months after the injury. In such a case as this, excision at the hip might have been advisable.

60th Rifles (1st Battalion).—Sergeant Hugh Walmsley, aged 30, was taken into hospital at Gravesend from on board ship, being unable to proceed to Fort Pitt with the remainder

of the invalids from India. Was wounded July 4, 1857, at Delhi, by a musket-ball, the ball entering about the upper third of the left thigh upon the outer side, and making its way out or through on the inner side, shattering the bone, some fragments of which have come away since he had been on board ship; on his arrival the wound was still open and discharging profusely; dead bone was easily detected by introducing the probe; was emaciated in the extreme, and suffering from chronic diarrhœa of a very obstinate character; the diarrhœa continued after his landing, and was eventually the cause of his death.

Post-mortem.—Body.—The marks of entrance and exit of a musket-ball on the inner and outer side of the upper third of right thigh; the limb was much shortened and distorted to the extent of about three inches, the great toe resting upon the instep of the opposite side. *Thorax.*—Heart and lungs both healthy. *Abdomen.*—Liver healthy, with the exception of one or two whitened patches on its surface; the lower portion of the large intestines was congested, and the mucous membrane showed marks of old ulceration, the result of chronic dysentery. Preparation No. 3624. Right femur, showing a comminuted fracture of the upper third, immediately below the trochanter; the fracture extends from the great trochanter obliquely, downwards and inwards, for an inch below the smaller trochanter; the extremity of the lower end of the fractured bone is on a level with the great trochanter; the extremities of the fractured ends of the bones are very firmly united by extensive depositions of new bone, and there is a large cavity between the ends, in which there is a round musket-ball, and a large aperture leading to it on the outer side, where it entered; on this side there is also a large irregular lamina of necrosed bone.

The last is a case of fracture between the middle and lower thirds, followed by necrosis, and extensive deposition of new bone so as in some measure to impede the motion of the knee-joint.

93rd Regt.—Private Samuel Hunter, aged 24, wounded at Lucknow, November 1, 1857, by a musket-ball, which struck the outer side of the left thigh, at the juncture of the middle and lower third, fracturing the femur, and passed out on the inner side; a number of pieces of necrosed bone have come away. Was sent in a dooley to Futtehpore, where he remained nine days; the limb being placed in a short splint along both sides; was then sent by dooley to Allahabad, where the long splint was applied, and retained four months.

September 26, 1858. Aperture of entrance and exit healed;

there is a sinus on the outer and posterior aspect of the middle and lower third of the thigh, through one of which bone can be detected; the left leg is one inch shorter than the other, and there is great deposition of callus around the fractured ends of the bone, which have been considerably displaced.

September 5, 1858. Invalided.

The three following preparations, Nos. 2936, 2937, 2938, where the patient survived for many months, show the great amount of comminution which takes place, even from the old ball, and the amount of distortion which unavoidably ensues from the impossibility of keeping up the requisite degree of extension, with the consequent necrosis of portions of bone, and the large quantity of callus which is thrown out. No. 2936 shows that the inflammation must have extended to the knee-joint, the patella having become anchylosed to the femur, with absorption of the cartilages. In No. 2937 there are several large portions of bone, dead, and in process of separation. No. 2938 shows an immense large comminuted portion lying behind, with very great displacement and shortening, with very profuse depositions of new osseous matter.

The preparations Nos. 2936 and 2938 were from patients who were wounded at Ferozeshah.

No. 2936. Comminuted fracture at the middle and lower third of the left femur, from gunshot. The bone is much distorted, and the lower portion is turned inwards; there is a large fragment lying in the posterior aspect, and the fractured extremities are united by a very abundant deposition of new osseous matter, in the centre of which are two portions of necrosed bone, firmly attached to the new bony matter. The patella is anchylosed to the femur, and the cartilage on the latter is absorbed. The patient died twelve months after the accident, from pyemia. Taken from Private James Hewitt, 29th Regiment, aged 25; seven years' service, of which four years in India; received a gunshot wound at Ferozepore, December 21, 1845; the ball passed through the left thigh, fracturing the femur, and lodged in the right, from which it was extracted. Admitted into Fort Pitt General Hospital, September 28, 1846. There were two depressions on the left thigh. On October 7th erysipelas attacked this thigh; on the 11th, incisions were made on its inner side, from which a piece of exfoliated bone was extracted.

From this date to the beginning of November the erysipelas had gradually extended to the foot, and had given rise to great constitutional disturbance. Openings were at different times made to give exit to large quantities of pus. There was

shortening of the limb to the extent of four and a half inches, and four openings in the thigh, one on the outer side, through which the probe reached the bone in a denuded state.

December 27th. He was attacked with acute pain in the left side, at the lower border of the true ribs, accompanied by cough and difficulty of breathing. Expectoration not coloured; on the left side there was dulness, and coarse crepitation heard.

He gradually became weaker, and died January 2, 1847.

Sectio Cadaveris.—External Appearances.—Body much emaciated; left leg much swollen, and four and a half inches shorter than the other; on making an incision into the affected limb, the sub-cutaneous fat and areolar tissue were thickened, and infiltrated with serum; on laying open the outer sinus there issued a large quantity of dark-coloured pus; underneath this opening, and lying close upon the bone, was found the flattened remains of a musket-ball. The left pleural cavity contained two ounces of turbid serum, in which were floating flakes and masses of lymph; the pulmonary and costal pleura was highly vascular, and coated with a recent layer of lymph, which was easily detached. The lower lobe was condensed, and sank in water; a section presented the usual appearance of grey hepatization, softened and broke down, and infiltrated with pus. Right lung healthy.

No. 2937. Gunshot fracture of the left thigh. The ends of the bones are very much displaced, but united by new bony deposit, which forms a large cavity; the end of the lower portion of the femur is necrosed and in progress of being separated; there are also several other portions of necrosed bone, either partially separated or bound down by the new bone; a comminuted portion of bone is situated on the outside, attached to the others by bony union.

No. 2938. Lower part of the right femur, showing an extensive comminuted fracture from gunshot. The broken ends are much displaced; the lower portion lies to the inner side of the upper, having been drawn upwards and inwards by the action of the muscles; the limb must have been shortened to the extent of three or four inches; there is a large fragment at the posterior part of the preparation, which is united to the two fractured ends, but particularly to the lower portion, by a very abundant deposition of new osseous matter; there is a large cavity between the posterior fragment and the lower portion of the femur; the upper extremity of the fracture lies to the outer side of the lower, the extreme end of which is sharp and pointed, having been fractured obliquely, and, probably, protruded through the skin. From an officer who received com-

pound fracture of the thigh from gunshot, at Ferozeshah, and afterwards died of phthisis pulmonalis.

The preparation No. 2939 is a good specimen of ununited fracture at the middle of the femur, and shows the amount of comminution which follows from *two* conical balls, and also the deteriorated state of the patient's constitution, very little callus having been thrown out. The bone in this case is not nearly so extensively comminuted as in preparations Nos. 2936, 2937, and 2938, which were produced by the old round ball. This specimen is also an excellent example, showing the care which is requisite in examining gunshot wounds, either before inflammation has set in, or when operative measures have become necessary. In this case *two* minie balls had entered the limb; one of them was loosened by the suppurative process, and was extracted, and the other was found, on post-mortem examination, lying between the ends of the ununited fracture. The ball is also seen to be enclosed between the ends of the united fractures in the case of Walmesley, page 46. The same has been noticed in the Report on the Wounded from the Crimea, p. 362. No. 2939. Gun-shot fracture in the centre of the right femur; bone much comminuted, and the extremities ununited and overlapping. The comminuted pieces are united by new bony deposit, and there are also several portions necrosed. Taken from Peter M'Donald, 42nd Highlanders, who was wounded on the Alma by a musket-shot, and sent to Scutari, when he was much reduced in strength, and the limb very much swelled, and discharging freely. After some time a musket-ball was discovered and removed; the swelling reduced, the sinuses closed, and he was enabled to move about with crutches. About a week after, the limb again swelled, irritative fever ensued, and the man died. On examining the limb, another minie-ball was found in the cavity between the ends of the bones, chiefly covered by ligamentous and bony matter.

When a bone has sustained an injury so as to cause a slight superficial exfoliation, this is generally quickly thrown off, but when necrosis of half the circumference, or even of the whole thickness of the shaft of a long bone, takes place, inflammation and suppuration to a greater or less extent ensue, and new bone is thrown out, which encloses the dead or dying bone. During the time these fragments are being detached, the patients are more exposed to the absorption of pus, and consequently death from pyemia.

The following preparations, Nos. 2934 and 2935, and also that of Private Hunter, from India, are excellent examples of

necrosis following these injuries, especially No. 2934, where nearly the whole of the shaft of the bone is dead, and enclosed in a new osseous case. It appears to have been the result of a severe injury to the bone, but without producing a complete fracture.

No. 2934. Femur presenting necrosis of its shaft. The sequestrum comprehends the entire thickness and nearly the whole length of the shaft, and is very rough on the surface. It is detached, and surrounded by a thick uneven shell of new bone, abundantly pierced by cloacæ, so as to expose the dead part extensively. From a man admitted with a gunshot wound of two years' standing; the ball had lodged, but had been cut out a month afterwards. On admission there were two openings between the hamstrings; his general health was very bad, and he died after ten weeks' treatment.

No. 2935. Lower half of the femur, exhibiting necrosis of the anterior circumference of its shaft. The sequestrum is rough on the surface, and loosely contained in a cavity, formed by an abundant deposit of new bone, which is pierced by numerous foramina. From a gunshot injury.

The preparation, No. 2941, shows a gunshot fracture of the lower third of the femur, which is fractured obliquely, and comminuted; a portion is driven into the medullary canal. The margin of both fragments shows the action of the absorbents; there is a line marking the portion of bone in process of separation, and partly necrosed along the margin of the fracture. Secondary amputation was performed at the upper third.

The preparation No. 2931 is an example of a round leaden bullet, producing an oblique fracture through the great trochanter, and becoming firmly imbedded in the cancellous structure of this tuberosity.

An illustration of a grape-shot lodging in bone without splintering, or even causing a fissure, is No. 2932, where there is a cavity at the base of the great trochanter, containing a grape-shot which is quite loose, the cavity being considerably larger than the ball.

Fracture of the Tibia only.

Gunshot fractures of the leg are frequently of such a severe character as to require immediate amputation, especially if produced by round-shot or shell. Those caused by musket-ball seldom call for the removal of the limb. In the leg, all the detached fragments of broken bone being so near the surface, are easily removed, and irregular portions from both ends of

the fractured bone are generally taken away by the saw, if necessary.

When one bone only is fractured, the sound one retains the other in its place, and makes the case much less serious. When the tibia is fractured high up, and the knee-joint has been injured, it will be a case for amputation, as it is only on very rare occasions that the limb can be saved. When the fracture takes place near the ankle, and a fissure extends into the joint, it is rarely that the patient recovers. This, however, took place in Patrick Burrowes, 5th Regt., under partial fracture.

Under this head 6 have been admitted, of whom 1 has been sent to modified duty, and 5 invalided. Only 1 was produced by grape, and the remainder by musket-ball; 3 were still unhealed. They were all very severe compound comminuted fractures of this bone, and, with the exception of one, all were followed by necrosis to a greater or less extent; 3 occurred in the upper third of the bone, and 3 in the lower, one of which was so close to the ankle-joint that partial anchylosis resulted. One man, of the Royal Artillery, died at Gravesend, but his name is not included in this return, although I take the opportunity of giving the details of the case.

The following is a case of extensive necrosis of the tibia:—

64th Regt.—Private Edwin Beardsall, wounded July 16, 1857, at Cawnpore, by a grape-shot on the right leg, about three inches above the ankle-joint. There was only a slight wound of the skin, but there was a comminuted fracture of the tibia; since then several very large pieces of necrosed bone have come away.

April, 1858. There is now a large deep hollow on the anterior and inner side of the tibia, with two sinuses leading inwards, but no bone could be detected in this direction. There is a third sinus on the inner side of the tibia, where bare bone can be felt. He cannot bear much weight upon the limb, and the ankle-joint is stiff for want of use.

December 22, 1858. Unfit for service; invalided.

The next case is a fracture of tibia, followed by anchylosis of the ankle-joint.

60th Rifles (1st Battalion).—John Flynn, aged 21, wounded at Delhi, June 19, 1857, by a musket-ball, which entered the inner side of the left tibia, two inches above the ankle-joint, and probably passed out at the external malleolus. Several pieces of bone came away from the entrance wound.

July 20th. Wound healed, skin adherent to tibia, ankle-joint partially anchylosed.

The following fatal case is an example of an extensive comminuted fracture which had united, but the bone became diseased:—Royal Artillery.—Gunner John Abberley. This man was admitted into hospital at Gravesend, being unable to proceed to Chatham with the remainder of the men. He was wounded by a musket-ball at Lucknow, the ball striking the upper third of the bone, under the attachment of the ligamentum patellæ, and carrying away a large portion of the bone. When taken on board ship, the wound was said to be about the size of a five-shilling piece, with the bone exposed in the centre, but looking healthy. Gangrene made its appearance about three weeks after sailing. When disembarked, the whole of the soft parts of the anterior surface of the leg, between the wounded part and the ankle was one large slough, coming away with the applications. The whole bone was exposed, the soft part on each side sloughy, blackened, and that offensive smell peculiar to the disease was present. Was emaciated in the extreme, and only kept up by the administration of stimulants to the hour of his death, which took place July 3, 1858.

Post-mortem.—Body.—Much emaciated. *Thorax.*—Old pleuritic adhesions between costal pleura and left lung; both lungs healthy and crepitant; heart and pericardium healthy. *Abdomen.*—Liver healthy; stomach and intestines healthy, as also the remaining viscera. No. 3628. Right tibia, showing a compound comminuted fracture at its upper third, two inches below the tubercle; the fractured ends have become re-united by very abundant depositions of new bone, especially on the posterior surface. In front there is a deep carious cavity, about two inches in diameter, and the same extent in depth. There is one large splinter on the inner side, which has become perfectly united to both ends of the tibia. In the recent state the whole of the anterior surface of the tibia was exposed, and in most part denuded of periosteum.

No. 2947 is an example of a gunshot fracture of the head of the tibia by a musket-ball, making its exit on the inner side of the leg, fracturing and comminuting the bone, but not injuring the joint. The fractured portions have re-united, there is a very abundant deposition of new bone around them, and there is a large cavity in the centre, which is in an ulcerated state. Taken from Private Henry Farrer, aged 32, 34th Regt., an Englishman, by trade a moulder. Total service, fourteen and a half years, chiefly at home, and in the Mediterra-

nean. Always enjoyed good health, and when admitted was a strong-looking man. He was wounded on June 7, 1855, by a musket-ball striking the head of the left tibia, making its exit on the inner side of the leg, fracturing and comminuting the bone, but not injuring the joint. Since then he has always been in hospital. Considerable quantities of bone have come away, but without any severe pain or loss of health. On admission three openings existed, through each of which part of a large sequestrum could be felt with a probe. December 13, 1858.—Died, nearly six months after the receipt of the wound, from pyemia. *Post-mortem Examination.*—Weight of lungs, 3 lbs. 12 oz. *Abdomen.*—A portion of the convex surface of the liver adhered very firmly to the diaphragm by recently effused lymph. Corresponding to this position, on making a section of the liver, a large diffused abscess was found, which contained ten ounces of pus, which was infiltrated throughout this part of the structure of the liver, several bands of which stretched across the sac. There was no defined wall to the abscess, which appeared to have resulted from the coalescing of several minute abscesses. The sac, on being opened, allowed a large quantity of very fetid gas to escape (sulphuretted hydrogen). There was a second abscess situated to the right of the other, and of nearly the same size. The rest of the structure of the liver was soft and friable, and easily broken up. Weight of liver, 5 lbs. 3 oz.

After a minute and careful examination, and tracing the veins of the left leg through the abdomen, no sign of inflammation could be detected. It is, nevertheless, the opinion of some pathologists, that in the great majority of cases some trace of inflammation in the veins may be found, and when they cannot, the veins affected are supposed to be so small or so obscure that they are overlooked. Further, that pus globules have been detected in the blood of the pyemic, and even in the blood of animals which have died from the effects of pus injected into the veins. The globules of pus have only once been discovered, so that pus globules seem in a great majority of cases to be rapidly destroyed after entering the circulation. This throws considerable doubt on the view that the pus globules become arrested in the capillaries in consequence of their size, and thus establish numerous foci of inflammation. Rokitansky also expresses his opinion very strongly against it. He considers that pyemia occurs not uncommonly as a primitive affection, that is to say, that pus is actually formed in the blood itself in consequence of certain changes of a chemico-vital nature. This is well seen in globular vegetations in the

heart. This supposition accounts for cases occasionally occurring in which there are multiple abscesses, yet no source of purulent infection can be discovered.—*Donor, Dr. Williamson, Staff-Surgeon.*

No. 2946 shows the tibia much enlarged, and presenting a cavity in its substance, from which a sequestrum has been detached, with several cloacæ. From a case of gunshot injury.

The preparation, No. 2949, shows a gunshot fracture of the upper third of the tibia. The bone was comminuted, and the fracture united, but with some displacement. A portion of the crest of the bone appears to have been on the point of being necrosed. The external margin of the centre of the fibula is carious.

Fracture of the Fibula only.

4 fractures of the fibula were admitted, of which 3 have been sent to duty, and 1 invalided. 1 only was caused by grape-shot, and 3 by musket-ball. All were healed on arrival.

Fracture of the Tibia and Fibula.

2 have been admitted, and been invalided. 1 was by a musket-ball, followed by sloughing and necrosis. The other was by a grape-shot at the lower third of the leg, followed by anchylosis of the ankle-joint.

75th Regt.—Private Thomas Dabney, aged 38, wounded at Delhi, June 8, 1857, by a grape-shot which struck him on the inner and posterior aspect of the tibia, one inch above the right ankle, and passed out through the external malleolus. Several pieces of bone have come away.

July 20th. Wound healed. Skin adherent to bone, and parts much thickened. Ankle-joint anchylosed. Considerable loss of bone of both tibia and fibula.

November 11, 1858. Invalided.

Preparation No. 2950 is a good example of fracture of both tibia and fibula at the upper third from gunshot. The fractured ends are united by a very abundant deposition of osseous matter, more particularly the tibia, in which there are several cloacæ leading into a cavity in the centre of the bone, where there were some portions necrosed. The fibula has been fractured obliquely; the superior lies to the outer side, and overlaps the lower portion to the extent of an inch, and the latter is united to the tibia by a quantity of new bone. New osseous matter is also deposited to a considerable extent on the surface of the tibia and fibula. On the anterior surface of

the tibia, immediately above the fracture, absorption of the new bony matter seems to have been going on.

Necrosis of portions of the shaft of the tibia frequently follows gunshot wounds of the leg,—more rarely of the whole thickness or length of the bone,—leaving sinuses discharging pus for months or years, and rendering the patient liable to death from pyemia, as in the case of No. 2947, Private Farrer.

No. 2946. Tibia much thickened, and presenting a cavity in its surface, from which a sequestrum has been detached with several cloacæ. From a gunshot injury.

The case of Beardsall is also a good example of a case of loss of a great portion of this bone by necrosis.

Division 5.—*Penetrating, perforating, or lacerating the several Structures of the Tarsus and Metatarsus.*

13 were admitted under this head, of whom 4 have been sent to duty, 2 to modified duty, 5 invalided, and 2 remain. 11 were produced by musket-ball, and 1 by round-shot; only one remained unhealed. Two went through the calcaneum; one across the fleshy part of the sole of the foot; two through the tarsus only. The one by round-shot bruised the bones, but did not break the skin, and caused severe injuries to both the tarsus and metatarsus. In those cases that were invalided the bones had been fractured, and tendons and ligaments lacerated, so as to produce in some cases considerable contraction and loss of power in the foot.

The following is an example of this injury:—

24th Regt.—Private Wm. Alexander, aged 21, wounded at Jehlum, July 7, 1857, by a musket-ball, which struck the outer side of the right calcaneum, passed through this bone, and made its exit on the inner side. On September 26, 1857, an incision was made on the posterior part of the os calcis, and necrosed portions of bone were removed, saving the attachment of the tendo Achillis.

August 2, 1858. Wounds healed, but cannot bear his weight on the heel.

August 3, 1858. Invalided.

Class V.—Gunshot Wounds, with direct penetration or perforation of the larger Joints.

This class is restricted to those cases where there is undoubted evidence of the joint having been directly penetrated. For instance, cases of partial or complete fracture of a bone close to a joint are either placed in Class IX., Division 2, or

in Class IX., Division 4, according as the case may be. These cases, although generally very severe, and followed by acute inflammation and suppuration, ending in anchylosis (as in the case of Farraher), are not of such a dangerous nature as when the ball has passed directly through the joint, fracturing the bone, as in those included under the present head.

Admitted from India:—Wounds of larger joints, with fracture of bones, 8; ditto without fracture, 1. Total, 9.

Of these, 6 have been invalided, and 3 remain undisposed of. 1 occurred in the shoulder-joint, 4 in the elbow, 1 in the carpus, two in the knee, and 1 in the ankle. 8 were caused by musket-ball, and 1 by a pistol-bullet. Except 2, all were healed.

In addition to these wounds of the larger joints, there are 3 cases of excision, viz.:—2 of the elbow and 1 of the shoulder-joint, which will be detailed under that head.

In the Crimean War 121 cases occurred amongst the men, of whom 25 died without any operative interference, and 10 among the officers, of which 4 were treated without operation; and of this number, 3 terminated unfavourably[a].

Shoulder-Joint.—Only one case is returned under this head as having arrived from India, and the history of the case is detailed under the class Resections, this operation having been performed at Fort Pitt. In several cases inflammation had taken place contiguous to the injury, resulting in thickening and contraction of the muscular and ligamentous structures, and in some cases the joint had become completely anchylosed, as in Private J. Day, 32nd Regt., under the head of Amputation of the Arm.

The preparations Nos. 2921 and 2922 show the starred fracture and fissures resulting from gunshot injury of the head of the humerus.

"Of 17 gunshot injuries of the shoulder-joint amongst the Crimean wounded, 2 were fatal in the primary hospitals without operation, the cases having apparently been complicated with some injury to the contents of the chest. One patient died in the secondary hospital at Balaklava, of idiopathic fever, contracted while under treatment for the wound, while the whole number of the remaining cases, viz., 14, required operative interference."

Elbow-Joint.—Four cases were admitted from India. All have been invalided.

In these elbow-joint cases, there can be no doubt of the

[a] *Vide* Report on the Crimean Wounded, p. 350.

direct penetration of the joint, with comminution of bone, resulting in anchylosis. In three of them the ulnar nerve was injured. In these instances the olecranon was fractured, and in one case the external condyle; the joint was anchylosed in all of them. In three of them the forearm was at an obtuse angle. In the fourth case the arm was quite straight, and the elbow-joint anchylosed, rendering the arm very useless; but in this case the humerus had also been fractured, making it very difficult to treat. Even now the limb is much more useful than any artificial arm which he could have been supplied with.

In none of them had resection been performed, and it becomes a question whether these patients would have had a more useful arm had the joint been excised, so as to allow of free motion of the joint. If it were possible to induce patients to use the arm at an earlier period of the treatment, they might preserve some motion in the joint.

"Of 30 injuries in the elbow-joint among the men in the Crimean War, and 4 among the officers, 4 were fatal without operation. 2 of these were complicated, with injury of the artery (1 of the brachial and 1 of the ulnar), and the fatal result seems to have been mainly due to the continued effects of shock and loss of blood."

In the two following cases from India, the joint is anchylosed, and the arm in a bent position.

32nd Regt.—Private Harry Arthurs, aged 33, wounded September 27, 1857, at Lucknow, in the left elbow. The musket-ball entered over the external condyle, and passed out on the inner side of the olecranon opening into the joint; severe inflammation and suppuration followed. The arm is now in a bent position, and the elbow-joint is anchylosed. He has lost the power over the fingers, and has no feeling in half of the ring finger and little finger.

June 22, 1858. Invalided.

78th Regt.—Private Wm. Wardleworth, aged 34, wounded at Lucknow, September 25, 1858, by a musket-ball in the right elbow-joint. It entered over the olecranon, and was cut out at the same place the following day; abscesses formed around the joint. 2nd. By a musket-ball on the inner side of the left knee; a flesh wound.

July 13th. The wounds are all healed, and the elbow-joint anchylosed. There is one large cicatrix on the inner side, adherent.

August 5, 1858. Invalided.

In the next case the joint was anchylosed, and there was also an injury of the ulnar nerve.

52nd Regt.—Private James Marshall, aged 27, wounded at Delhi, Sept. 14, 1857, by a pistol-ball, which passed through the elbow-joint. It entered close to the outer side of the olecranon process, and between it and the external condyle, and passed through the olecranon, and made its exit on the inner side of this process, close to the ulnar nerve. There was a discharge of synovia from the wound for some days.

July 20th. Wound healed; elbow-joint bent and anchylosed. Has lost the sensation of the little and one-half of ring fingers.

July 22, 1858. Invalided.

The following is a case of wound of the joint, complicated with fracture of the shaft of the humerus. Elbow-joint anchylosed, and the arm in a straight position.

61st Regt.—Private M. Dunne, aged 38, wounded at Delhi, July 9, 1857, by a musket-ball, which entered through the centre of the right deltoid muscle, and passed downwards, fracturing the humerus about its centre, and made its exit at the elbow-joint, where it also appears to have wounded the joint and fractured the olecranon process of the ulna. The arm was placed upon a straight splint. Both apertures of entrance and exit soon healed, but considerable inflammation of the arm and elbow-joint ensued, which was relieved by free incisions.

Sept. 5, 1858. Wounds made by musket-ball healed. There are two sinuses on the outer aspect of the arm, about its centre, leading down to necrosed bone. The fracture at this point is united; the forearm is in a straight position, and the elbow-joint anchylosed. The arm is about $1\frac{1}{2}$ inches shorter than the other.

Jan. 13, 1859. Invalided.

Hip-Joint.—No case of wound of this joint arrived from India. There is a preparation in the Museum, No. 2930, where the old ball is firmly lodged in the head of the femur, having produced only a fissure. This would have been a favourable case for resection. The following is a description of it:—

No. 2930.—A matchlock-ball, firmly lodged in the head of the femur. The ball entered opposite to the trochanter major, and passed through the brim of the acetabulum. From Private Alexander M'Phail, aged 33, wounded at Dubha, March 24, 1843, by a matchlock-ball, which entered a little above the great trochanter of the right limb anteriorly, and was lost. The leg became powerless. On coming to Colaba, on April 28, he did not complain of much pain, except when the joint was

moved. Slight fulness over the hip was the only symptom of injury. Leeches and counter-irritation were employed, and he seemed to get better. On May 6th he was attacked with trismus, and died on the 9th.

The ball was found imbedded in the head of the femur, which, with half of the brim of the acetabulum, was shattered, and the capsular ligament formed the sac of an abscess, which contained a considerable quantity of pus and spiculæ of bone. The orifice of the wound, it is added, had closed some time previous to his death.

10 cases of wounds of the hip-joint are returned in the Report on Crimean Wounded. In 3 there had been such extensive injury inflicted that they proved fatal in a few hours. 7 were discharged for operation, 1 of which was for amputation at the hip-joint, in a case of extensive longitudinal fracture into the joint; the remaining 6 for resection of the head of the bone.

Excision of the hip-joint for gunshot injury has been performed eleven times. Of these, but one recovered, that of a soldier wounded by a shell at Sebastopol, and operated upon by Dr. O'Leary. The patient was 25 years of age; the head, neck, and trochanter of the femur were removed.

Of the 11 cases recorded, 6 occurred in the Crimean War. 1 occurred in the Schleswig Holstein War; 1 by Dr. Ross, 1 by Oppenheim, 1 by M. Seutin, and 1 by Schwartz. In the Crimean war, excision of the head of the femur was performed six times, and all but one were primary operations. One of the patients survived the operation, and recovered, viz., Private Thomas M'Kenna, 68th Regt. On his arrival at Chatham, the limb is reported to have been about $2\frac{1}{2}$ inches shorter than the other, and capable of bearing some considerable portion of the weight of the body. He could swing it and advance it, but the knee could not be bent. Rotation was admitted to a very limited extent, but performed with considerable pain. The wound was soundly healed, and the man was discharged from the service.

So far as the results of the Crimean war go, it clearly proves the superiority of excision of the head of the femur over amputation at the hip-joint.

The head of the femur has frequently been excised for morbus coxæ, and with great success, but no comparison can be made between it and that for gunshot wounds. No doubt in any future campaign, excision of the hip-joint will be much more frequently employed, and great attention paid to the selection of cases.

Knee-Joint.—2 were admitted from India. 1 was invalided, and the other remains.

In one case the synovial membrane was directly perforated, but no fracture of bone had taken place. In the other it is doubtful if the ball penetrated the cavity of the joint, although the surgeon says it passed through the joint.

In the Crimean war, 23 cases are returned among the men, and 6 in officers. 6 of these patients died, viz., 3 men and 3 officers. 13 men and 2 officers were discharged for operation, but one only of those for resection of the joint, and in that case the operation was a secondary one, an attempt having been made in the first instance to save the limb. In the remainder amputation was resorted to.

In the following case from India, the ball seems to have passed through the condyles of the femur, and was followed by partial anchylosis.

Private John Dunlay, aged 26, wounded at Lucknow, November 16, 1857, by a musket-ball, which struck him on the inner side of the right knee, two inches from the side of the patella, passed through the condyle of the femur and knee-joint, and passed out on the outside of the joint, close to the head of the fibula.

July 13th. Wounds healed, knee-joint slightly bent, and partially anchylosed. Can walk tolerably well, and has a very useful limb; neither cicatrix adherent to the bone.

In the next case it is rather doubtful whether there was direct penetration of the joint.

93rd Regt.—Sergt. David Simm, wounded at Royah, on April 15, 1858, by a bullet which entered 1½ inches to the inner side of the patella, over the inner condyle of the femur, and made its exit at a little higher level, over the tendon of the inner hamstring. It is doubtful if it entered the cavity of the joint, although the surgeon says, "passed through the joint." It was followed by acute inflammation of the joint, and the limb cannot now be fully straightened, and on flexing it a grating sensation is felt.

The following case, although not included in the Return as a wound of the joint, is interesting as showing the inflammation extending to the structures of the joint, terminating in anchylosis.

61st Regt.—Private Martin Farraher, wounded August 25, 1857, by a musket-ball, which entered the external condyle of the left knee-joint, making its exit through the outer side of the popliteal space. Considerable inflammation and swelling of the joint ensued.

Sept. 5th. The joint itself does not appear to have been wounded, but from its proximity, severe inflammation followed, resulting in complete anchylosis. There are livid spots on his leg, from his constitution being tainted with scurvy, and his gums are spongy.

As yet our experience of excision of the knee-joint in cases of gunshot fractures is not extensive, and the means necessary for after-treatment in military practice are not encouraging, but the success which has followed it in cases of disease of the joint makes military surgeons also wish to extend it to the field. The absolute rest and quiet after the operation which are so difficult to obtain with an army in the field is the chief and the only objection to its adoption.

There are 2 cases recorded of excision of this joint for gunshot injuries—1 in the Schleswig Holstein war, and the other in the Crimean war. Both died.

The following preparation, No. 2933, shows the condyles of the femur and the patella fractured by a carbine-ball, which in its entrance has comminuted the point of the patella, split the bone longitudinally, and lodged in the bone between the condyles, and caused a fissure through the internal one. From Private M. Walsh, 3rd Light Dragoons. The injury took place while the leg was in a state of flexion, from the accidental discharge of his comrade's carbine. The limb was amputated twenty-four hours after, and the man arrived at Fort Pitt quite well at the end of three months. The two following preparations, Nos. 2943 and 2944, are very interesting, as showing a perforating gunshot wound through the knee-joint. The ball entered the back part of the joint, and passed directly forwards, and shattered the patella in its exit, followed by recovery and anchylosis. Twenty-six months after the injury the man died at Fort Pitt, of an enormous abscess of the liver, the result of previous service in India. No. 2943. Section of a knee-joint, the bones of which are completely anchylosed, and the capsule obliterated. Dense cellular tissue occupies the interspaces of the articular surfaces. No. 2944. Section of preceding knee-joint, in which the soft parts have been removed, showing the cancelli of the femur and tibia, and also of the patella, completely continuous. The patella was irregularly fractured, and the fragments are now consolidated by osseous matter, and united to the femur. From Private Edw. Marr, aged 35. 20th Regt.—Was sent home from India in consequence of a gunshot wound of the left knee-joint, received on Oct. 21, 1833. Admitted into Fort Pitt, May 10, 1835. Left knee-joint was anchylosed; there was a cicatrix between the

vastus externus and triceps, and another immediately above the superior border of the patella. Muscles of the limb much attenuated. General health very indifferent, being under treatment for disease of the liver, of which he died on May 20, 1835.

On post-mortem examination there was found a large abscess in the right lobe of the liver, which communicated through the diaphragm with the base of the right lung. The sac of the abscess contained six pints of thick pus. The spleen was very much enlarged and softened. The peritoneal cavity contained two pints of turbid serum, with flakes of lymph floating in it.

The following preparation of a severe comminuted fracture of the head of the tibia is interesting as showing the discovery of a second fracture of the tibia, not compound, however, and situated about the middle of the bone. The skin over it showed not the least trace of injury from the fracture. How the fracture was produced is a matter for conjecture. If excision of the joint had been contemplated, this after discovery would have been, at the least, embarrassing.

No. 2948. Compound comminuted fracture of the head of the left tibia, caused by a shell. There is a second fracture situated about the middle of the bone. From Private James Aitkin, aged 27, who received a severe shell wound of the left leg in the trenches on August 18, 1855. He was standing erect at the time. The knee-joint was distinctly opened into, and the head of the tibia severely comminuted. Amputation was immediately performed, and the patient recovered.—*Donor, Dr. Cowan, Assistant Surgeon, 55th Regt.*

The following preparation shows a bayonet wound of the knee-joint, followed by severe inflammation, profuse purulent discharge, and irritative fever, rendering amputation necessary sixty days after the injury.

No. 3633. A portion of quill passed through the original wound shows the direction it took; it is situated just beneath the level of the patella, and a little to the right side. The synovial membrane is thick and gelatinous.

West York Rifle Regt.—Private John Gannell, of strong, healthy aspect, while drinking in a public-house, on February 5, 1858, a sergeant of another regiment drew his bayonet and wounded him on the left knee. The wound had every appearance of having pentrated the joint; the pus was excessive; the wound, though small, was deep, and situated just beneath the level of the patella, and a little to the right side of it. Late in the evening of the 5th he was delirious, and in great agony; the

pulse alternately full and bounding, and rapid and depressed: his sufferings were so great that anodynes had to be largely given before anything like a quiet state could be arrived at; the knee became swollen, and the pain continued, and showed signs of the formation of pus in the joint; abscesses also formed outside the joint, and were opened. A profuse discharge of purulent matter continued from the wound, and the man's appearance, pulse, &c., assumed the hectic character rendering amputation of the limb necessary, which was performed April 6, 1858, and the patient recovered.

Ankle-Joint.—The following case was the only admission from India under this head:—

37th Regt.—Private Charles Smith, wounded April 17, 1858, near Azinghar, by a musket-ball, which entered the left instep in front, and above the internal malleolus, and was cut out about two and a half inches lower down, and a little posteriorly. The inner malleolus appears to have been removed subsequently in fragments; anchylosis of the ankle-joint has followed; the foot turns slightly inwards, and the great toe is stiff. Invalided February 9, 1859.

Division 11[a].—*Gunshot Injury of the larger Arteries, not being at the same time cases of Compound Fracture.*

Under this head none were admitted from India. It is, however, probable that the case of Private Bulger, which is detailed at page 38, is of this nature.

It is seldom that primary hemorrhage occurs on the field of battle, even though the ball may have passed directly through the course of a large artery. This is in some measure accounted for, although not entirely, by the round form and the strong elastic coats, but especially by the mobility of the vessel.

Arteries and veins firmly bound to bone are more likely to be injured than those that are lying loose in the fleshy parts of a limb: for instance, the femoral on the brim of the pelvis.

The coats of the veins being thinner than the artery, are much more readily injured, and primary hemorrhage proceeds more frequently from them than from the arteries.

Only 14 such are returned amongst the men during the whole period of the Crimean war, and one in an officer.

The following preparation is a beautiful example of the

[a] This class was left out in the Return of the Wounded from India, in consequence of none having been admitted; but it is inserted here, and thus alters the numbering of the succeeding classes.

elasticity and toughness of the coats of both artery and vein, and likewise of the mobility of these vessels, allowing of being pushed aside by the ball.

No. 408. Portion of the femoral artery and vein, between which a ball has passed, causing mortification of the limb, and death.—*Donor, J. Guthrie, Esq., D. I. G.* This specimen was taken from Private P. Tumbrill, of the Grenadiers of the 74th Regiment, of good stature, who was wounded on April 10, 1814, by a musket-ball, passing from the inside to the outside of the middle of the thigh; he says it bled considerably at first, but the bleeding soon ceased; the wound was not painful, and he thinks he observed the leg and foot to be colder than the rest of his body for the first two or three days, but did not much attend to it, further than conceiving the numbness, coldness, and impeded power of motion as natural to the wound.

"On the 18th April the gentleman in charge of this patient pointed him out to me as an extraordinary case of gangrene, coming on without, as he supposed, any sufficient cause. The wound on the outside of the thigh, or the exit of the ball, was nearly healed, and that on the inside was without inflammation or tumefaction, and with merely a little hardness to be felt on pressing. The pulsation of the artery could be distinctly felt to the edge of the wound; the leg was warm; the gangrene confined to the toes; the artery of the other thigh could be distinctly traced down to the tendon of the triceps. As he was at a small hospital about two miles from town, I did not see him again until the 20th, and afterwards on the 23rd, when, although the gangrenous portion included all the toes, it had the appearance of having ceased. Satisfied that it would again extend, I left directions with the assistant surgeon, that the limb should be amputated below the knee.

"The surgeon, whom I had not seen, and who did not understand the subject, disobeyed the order, conceiving there must be some mistake. On visiting the hospital a little after daylight on the 25th, I was greatly annoyed at finding the operation had not been done, and that the mortification had begun to spread the evening before. It was then too late; on the 26th it was above the ankle, with considerable swelling up to the knee; at night the man died, and the next morning at six o'clock I removed the femoral artery from Poupart's ligament to its passage through the triceps, which part was affected by the mortification.

"The ball had passed between the artery and vein in the spot where the vein is situated nearly behind it, and adherent only by cellular membrane, through which the ball made its

passage; the coats of the vein being little injured, and those of the artery not destroyed in substance, although bruised; it was at this spot much contracted in size, and filled above and below by coagula, which prevented the transmission of blood, and the vein above and below the wound was filled with coagulum, and was also impassable."

This preparation is unique. It is perhaps the only one in existence proving the elasticity which vessels possess, and their capability of avoiding to a certain extent an injury about to be inflicted on them.

Ligature of Arteries.—2 cases requiring ligature of arteries occurred: 1 was deligation of the radial artery, eleven days after a gunshot fracture of the ulna, implicating this artery; the other was for secondary hemorrhage, one month after a gunshot wound of the leg, with partial fracture of the tibia; the ligature was placed upon the lower third of the posterior tibial. In a third case it is stated that the brachial artery was tied, but there appears to be some doubt on the subject. The following is one of the cases:—

53rd Regt.—Private Patrick Hanafin, wounded at Lucknow, November 16, 1857, by a musket-ball, which entered on the inner side of the left tibia, about three inches above the ankle-joint, and passed through the fibula, three inches from its lower extremity; about one month after, secondary hemorrhage took place, following sloughing of the wound, requiring ligature of the posterior tibial at the lower third of the leg. He was also wounded in the right thigh by a musket-ball, which entered on the outside near its centre, and passed through in front of the femur, on the inner side, close to the course of the femoral artery.

Both wounds are healed.

Class 12.—Gunshot Wounds, with direct injury of the large Nerves, not being at the same time Cases of Compound Fracture.

6 cases have been admitted, 3 invalided, and 3 remain. All were wounds of the brachial plexus. In one there was complete paralysis of the arm, with a partial fracture of the scapula. In two the paralysis was only partial. In one case the arm hung powerless by the patient's side, without the slightest sensation or power of motion, and the temperature much diminished. In the other two cases the impaired condition of their arms, although not to such a great extent, was yet very nearly so. Various treatment was adopted,—blisters,

galvanism, friction, cold and salt-water baths, &c., without the slightest benefit.

Large nerves, like arteries, generally escape being wounded by musket-balls. When they are injured, paralysis of the limb, to a greater or less extent, comes on, along with numbness and wasting of the muscles of the extremity, as occurred in the following cases:—

Private Peter Clear, wounded at Cawnpore, November 28, 1857, by a musket-ball, which entered the posterior part of right shoulder, above the spine of the scapula, and caused a partial fracture of this bone, and passed directly forwards, and was cut out immediately above the centre of the right clavicle.

August 16, 1858. Wound healed. He has entirely lost the sense of feeling and of motion in this arm, which hangs quite powerless by his side. Temperature diminished, and the integuments are bedewed with a cold, clammy perspiration.

November 23, 1858. Invalided.

78th Regt.—Private John Daniels; wounded at Lucknow by a musket-ball, which entered below the right scapula, and passed out about two inches further forward; re-entered in the axilla, and came out about the middle of the inner edge of the deltoid. He was shot from behind while loading his firelock.

July 13th. Wounds healed. Loss of sensation and motion in arm, which is always covered with perspiration.

August 5th, 1858. Invalided.

Class 13.—Sword and Lance Wounds.

Under this head 12 have been admitted, of which 5 have been sent to duty, 1 to modified duty, and 6 invalided. In 2 cases the elbow-joint was wounded; in 5 the forearm; in 2 the back of the wrist: and in 3 cases the fingers and thumbs were injured. In the 6 invalided the condition of the forearm and fingers was more or less injured. In 1 of them both bones of the forearm were severed, with nearly total loss of use of the hand resulting. In another the tendons of the ring-finger of the right hand were cut, and the joint became anchylosed; and in the third there was impaired use of the thumb and index-finger from the extensor tendons having been cut.

In the cases sent to modified duty the elbow-joint had been opened into, followed by anchylosis. There is also a second case of anchylosis of the elbow-joint that has been invalided. Those sent to modified duty had perfectly recovered the use of their limbs.

90th Regt.—Private Joseph Albison, wounded by sabre-cut on the posterior part of the right forearm, about 3 inches above the wrist, which nearly severed both bones. There is now loss of power of the extensor muscles; there is considerable deposition of new osseous matter around the cut bone. The hand is slightly bent inwards, powerless, and he cannot use his fingers, which are in a straight position.

June 15, 1858. Invalided.

9th Lancers.—Private Joseph Twining, wounded at Delhi by a sabre cut on the posterior and under surface of the left elbow-joint, which appears to have cut the external condyle of the humerus and olecranon. No pieces of bone came away, and the wound did not heal completely for three months.

August 2nd. Wound healed. Elbow-joint in a bent position, and completely anchylosed. Cannot pronate and supinate the hand.

September 3, 1858. Sent to modified duty.

Class 14.—Bayonet Wounds.

Only 2 cases of this description of injury are returned as having arrived from India. One was a wound in the back, close to the spinous processes, and he was sent to duty; and the other was in the forearm; and, from the man's account, the ulnar artery was wounded, and tied at the wound of entrance.

The following preparation of a bayonet wound of the brain through the orbital plate of the frontal bone ought to have been placed under "Sabre or Bayonet Wounds of the Head:"—

No. 2792. Left orbit, exhibiting a small punctured fracture of the orbital plate of the frontal bone, just above the os unguis; the margins of the fracture are driven inwards. This was produced by an accidental wound from a bayonet. The wound in the skin was very small, and soon healed, but the patient had pain in the head, fever, then coma, and death on the twelfth day after the injury. A small triangular portion of the fracture was elevated inwards and sticking in the dura mater, and the membranes of the brain were inflamed near the wound, and covered with puriform matter.—*Donor, Dr. Young, Surgeon, 95th Regiment.*

Class 15.—Miscellanous Wounds and Injuries received in Action.

9 have been admitted, of which 2 have been sent to duty, 1 to modified duty, and 1 invalided. 3 were caused by ex-

plosion of gunpowder, producing severe burns, and 1 by a fall from a ladder at Lucknow when examining a mine belonging to the enemy, injuring his leg. One had lost his ear, and another an eye.

Balls, Missiles, &c.—No. 2952. Specimen of the matchlock-ball used by the inhabitants of the Euzuffeii country in the Himalayas, extracted from a wound received in action.—*Donor, Dr. Jephson, A. S., 9th Lancers.*

No. 2953. Rifle-ball which was lodged near the hip-joint from a Malay of Ceylon Rifle Regiment. Result, abscess and death.—*Donor, Mr. Swettenham, A. S. S.*

No. 2957. Grape-shot, weight 6 oz., from the thigh of Sergeant Brown, 14th Regt., invalided for shortening and much impaired use of left leg, after gunshot compound comminuted fracture of the left thigh at the siege of Sebastopol.—*Donor, J. R. Taylor, C.B., D. I. G.*

No. 2958. Cast of a ball. This grape-shot fractured the alveolar process of the superior maxillary bone, and passed downwards, and lodged in the right side of the neck, having fractured the lower jaw, a portion of which was extracted with some of the teeth. The ball weighed 1 lb. $3\frac{1}{2}$ oz., and was removed by a careful dissection, as it was lying close to the carotid. He still complains of slight pain when pressure is made on the lower jaw, and he can only make use of liquid diet.

No. 2951. Three pieces of coin removed from the thigh. "A Hanoverian soldier received a severe wound from a grape-shot which struck him on the external part of the thigh, producing very extensive laceration. On the second day he was brought to hospital, and the usual dressings applied. On the fifth day a long, narrow passage was discovered by the probe, seeming to run nearly the whole length of the vastus externus muscle. On cutting into this, three pieces of coin (which, from the very curious way in which they were compacted, I thought worthy of being presented to the Director-General of Hospitals) were extracted from the parts.

"This poor fellow, a raw recruit, had no money whatever about him, nor even a pocket to contain it, and fervently protested against his right to this forced loan. He accounted for it by supposing it was carried from the pocket of his comrade, who stood before him in the ranks, and who was killed by the same shot.

"The coins, consisting of two five-franc pieces, were obviously first struck by the shot, and carried along by it. For nearly one half of their surfaces the silver pieces adhered

closely together; on the other, where the ball had struck their edges, the metal was flattened out, and somewhat hollowed. In this hollow lay the copper coin, in some degree adapted to the shape of the depression in the larger pieces.

"I cannot omit noticing here a trait strongly illustrative of the mobility of mind which characterizes soldiers, and their proneness to superstition and belief in omens, which a surgeon acquainted with their character may often turn to their benefit.

"The part of these two coins which had been flattened out happened to be that on which Napoleon's head was impressed. From one it was nearly effaced, and on observing this circumstance to the patient and his comrades, an universal burst of joy echoed through the ward. The young Hanoverian exulted in the share he conceived he personally had of contributing to the downfall of the French Emperor. His health rapidly improved, and I have no doubt this simple circumstance had a good effect upon every man who witnessed it."—*Donor, Dr. Guthrie, D. I. G.*

AMPUTATIONS.

Total number of amputations, 158. Of these, 3 have been sent to duty; 21 to modified duty; 123 invalided; 2 died; and 9 remain undisposed of.

It may be mentioned that Mr. Heather Bigg supplied the men with every mechanical appliance, on the most approved principle which his experience could suggest.

Amputation at the Shoulder-Joint.—6 have been admitted and invalided; only 1 remained unhealed. 4 were by the superior and inferior flap; and 2 by the anterior and posterior flaps; the stumps were all good and round, and the integuments not puckered; both methods of operating gave equally good results: all were done under the influence of chloroform; all were primary operations.

In the following case the stump sloughed.

Rifles (2nd Battalion).—Private James Gayler, wounded at Cawnpore, November 28, 1857, by a grape-shot, which shattered the arm. Amputation was performed at the shoulder-joint, three hours after the injury, under the influence of chloroform, by anterior and posterior flaps; the ligature did not come away for some time, and caused considerable irritation; sloughing also took place, with much suppuration.

July 11, 1858. The stump is good and solid, although there are three small portions of the margins of the flaps unhealed, with exuberant granulations arising from them.

September 3, 1858. Modified duty.

The two following preparations are good examples of necrosis affecting the stump of the humerus, comprising nearly the entire thickness of the shaft, occurring in a very scrofulous subject, and which demanded secondary amputation at the shoulder-joint, two years after the primary operation. Death from pyemia ten days after the last operation. No. 2916. Section of the stump (in spirits) of the upper half of the humerus, removed by secondary amputation at the shoulder-joint. A portion of the upper part of the shaft of the bone, immediately below the neck, about two and a half inches in length, and comprising nearly the entire thickness of the shaft of the humerus, is necrosed; the necrosed portion is firmly enclosed in a case of new bony deposit, through which there are two apertures opening externally; the medullary membrane is soft, spongy, and inflamed; the medullary canal is open inferiorly at the amputated extremity, and allowed of the free escape of discharge; a thick layer of new bone entirely surrounds the whole of the shaft. No. 2917. Is a section (dry preparation) of the preceding. The entire shaft of the bone, with the exception of its neck, is surrounded by a thick, granular deposit of new bone. The compact structure of the old bone is soft and cellulous; the medullary canal is also rough and spongy, the result of inflammation of its lining membrane; there is also an aperture in the neck of the bone, communicating with the medullary canal.—*Donor, Dr. Dane, Staff-Surgeon.* This specimen was taken from Private James Clarke, 77th Regiment, aged 21, of highly strumous diathesis and unhealthy aspect. He had suffered amputation of the arm about the middle third, in May, 1854, in consequence of severe gunshot wound, and, on admission into hospital at Colchester, September 4, 1855, the wound was healed through the greater part of its extent, but there were two small sinuses opening on the face of the stump, which discharged profusely, and dead bone could be detected by a probe through each of them; his appetite was bad, and general health indifferent.

April 19, 1856. His progress was so unsatisfactory that the operation of removing the stump, at the shoulder-joint, was decided upon, as the only chance of saving his life. He was low after the operation, but rallied, and seemed likely to do well, until the 23rd, when he became low, irritable, and unable to take nourishment; constant nausea and diarrhœa set in, and a train of inflammatory symptoms, under which he gradually sank, and died on May 1, 1856.

At the post-mortem examination, the liver was found large and friable; the right kidney diseased; serous effusion in the

peritoneal cavity and deposits, marking the existence of subacute peritonitis; and the intestines were soft, dark, and injected. The whole structures around the shoulder-joint were abnormal and degenerated; and the clavicle, scapula, and first rib extensively affected with disease, similar to that exhibited in the preparation of the humerus. The cancellous structure appeared disorganized, dark, spongy, and soft, and filled with a dark brown fluid (which was not found in the humerus when removed), in which it appears that the bony structure was gradually becoming, as it were, dissolved, but there was no attempt at formation of new bone around, as in the arm.

The two succeeding preparations from two soldiers of the same regiment, who received compound comminuted fracture of both bones of the forearm, at Inkerman, November 5, 1854. Amputation at the centre of the arm was immediately performed. Necrosis followed in both cases, and amputation at the shoulder-joint was performed on both patients, July 25, 1855, eight months after the primary operations.

The necrosis in the preceding preparation, No. 2916, and the two under notice, appears to have originated in inflammation of the medullary membrane and canal.

No. 2918. The necrosed portion comprises the entire thickness of the end of the shaft, and is about five inches in length, nearly detached, and partly surrounded by a new osseous case. From Private James Leman.—*Donor, Dr. Browne, Assistant-Surgeon, Coldstream Guards.*

No. 2919. The necrosed portion comprises the entire thickness of the shaft, and is about two inches in length, and is not situated at the end of the stump, but at the upper part of the shaft, close to the tubercle, and is partly surrounded by new osseous matter. From James Curds.—*Donor, Dr. Munro, Surgeon-Major, Coldstream Guards.*

Amputation of the Arm.—46 cases have been admitted, of which 3 have been sent to modified duty; 40 invalided; 1 died; and 2 remain undisposed of. Of these, 33 were in the middle of the arm, and 12 in the upper third; 1 quite close to the tubercle; 41 were healed, and 5 still remain open; in 37 instances the cicatrix did not adhere to the bone; and in 9 cases it was found to adhere to a greater or less extent, generally very slightly.

In 36 instances the flap operation appears to have been performed, and the circular method 8 times. 30 operations were done under the influence of chloroform, and 14 cases without this agent. 35 were primary, and 11 secondary amputation. In 3 cases severe sloughing of the stump followed.

2 of them ultimately recovered; the third died at Fort Pitt. In 1 case there was also anchylosis of the shoulder-joint, resulting from the injury caused by round-shot.

The following is an example of sloughing taking place in the stump, along with hemorrhage from some small vessel, occurring in a scrofulous subject after a second amputation in the arm. It also shows how difficult it would have been to have found and secured the bleeding vessel in this case.

32nd Regt.—John Healy, aged 20, wounded at Lucknow, September 5, 1857, by a round shot on the right wrist, carrying away the hand. The forearm was amputated the same day by double flaps under chloroform. The stump assumed an unhealthy appearance, and sloughed. One large piece of bone came away. Amputation was a second time performed on board the ship, at the Cape of Good Hope, April 13, 1858, eight months after the accident. The stump has never entirely healed.

Fort Pitt, June 11, 1858. There is now considerable inflammation around the stump, particularly along its inner side, and the cicatrix was raised and œdematous. It is probable that the bone is again diseased. There was thick, purulent discharge from the stump, but he did not complain of pain in it. Appetite impaired, and bowels constipated, he is of a very strumous diathesis. On June 17 matter formed on the inner side of the stump: distinct fluctuation could be felt. On the 23rd, the stump became suddenly very painful, redder, and more tense, and an incision was made into it, from which was discharged dark coagulated blood. He was in a very low, anemic state. Oozing of blood took place from the stump, which was restrained by the application of ice. He gradually became weaker, and died on June 27th.

Treatment.—Nourishing diet, wine, quina, &c. To the stump, fomentations, poultices, cold applications, and iced, as the state of the case required.

Sectio Cadaveris, twelve hours after death.—*Cranium.*—Brain healthy. *Thorax.*—Heart empty; blood pale, and destitute of red globules; lungs œdematous, but otherwise healthy. *Abdomen.*—Convex surface of the right lobe of the liver adhered to the diaphragm by old bands of adhesion, and a few slight depressions, resembling cicatrices. The other viscera in this cavity were healthy, with the exception of being pale and bloodless; veins healthy.

Stump tense and swollen, with several incisions on its surface, from two of which large coagula projected. The stump was of a very fœtid and gangrenous smell, and on cutting into

it a very large cavity was found to extend from the extremity of the bone up along its inner side into the axilla, as far as the first rib, completely dissecting the axillary vessels and nerves, and likewise the muscles of the arm; the shoulder-joint was opened into by absorption of the capsular ligaments, the cartilage covering the head of the bone and glenoid cavity being discoloured by the blood, but not diseased. The vessels from which the blood was poured out could not be detected even by careful dissection, showing how difficult, or almost impossible, it would have been to find the bleeding vessel, or even the axillary itself, in such a case in the living subject. A small portion of the extremity of the amputated humerus was bare and carious, which probably was the origin of the deep-seated inflammation and suppuration, causing ulceration of one of the smaller bloodvessels, and consequent hemorrhage, followed by a gangrenous state of the stump, and death from exhaustion. Preparation No. 3632. Stump of the right humerus after secondary amputation, resulting from a gunshot wound. The end of the bone shows that the medullary canal has not been closed, although nature has attempted to do so to some extent, and the end is partially rounded off; the shaft of the bone is roughened, particularly below the head of the bone, where it is denuded of periosteum, and is carious.

The following case shows anchylosis of the shoulder-joint after amputation of the upper third of the arm:—

32nd Regt.—Private John Day, wounded at Lucknow, August 27, 1857, by a round-shot, which carried away a great portion of the upper arm, shattered the humerus, and left the large vessels and nerves hanging loose. Amputation was performed by the circular method, one hour after, under chloroform, at the upper third, close to the insertion of the deltoid. Exfoliation of the extremity of the bone took place, and it was extracted June 29th.

August 16, 1858. Wound healed; cicatrix adherent to the end of the bone; shoulder-joint anchylosed, the result of the injury and surrounding inflammation.

September 2, 1858. Sent to modified duty.

Amputation of the Forearm.—19 cases were admitted, of which 1 has been sent to modified duty, 17 invalided, and 1 remains undisposed of. All have apparently been performed by double flap. 16 were done under the influence of chloroform; 15 were primary, and 4 secondary amputations; 4 in the upper, 11 in the middle, and 2 in the lower third. All were healed. In no instance was the integument adherent to the bone; the stumps were good.

Amputation of the Thumb.—12 were admitted. 1 has been sent to duty, 5 to modified duty, 5 invalided, and 1 remains undisposed of. All were healed.

Amputation of the Fingers.—38 were admitted, of which 1 has been sent to duty, 10 to modified duty, 26 invalided, and 1 remains undisposed of.

There were several good examples of conservative surgery, where the whole of the hand had been taken away, with the exception of the thumb and forefinger. In many cases, where one or more fingers had been amputated, the others had become so bent and contracted that forcible extension had to be employed, with very good results.

Amputation at the Hip.—The following case is interesting, as being, perhaps, the first successful case of amputation at the hip-joint after a gunshot fracture:—No. 2929. Head of the femur removed by amputation at the hip at Brussels after the battle of Waterloo. The fracture extends obliquely downwards from the neck of the bone through the shaft, leaving the trochanter minor only attached to the head of the femur.—*Donor, Mr. Guthrie, D.I.G.* This specimen was taken from Francois de Gay, Private in the 45th Regiment of French Infantry.—He was wounded at the battle of Waterloo by a musket-ball, which entered behind, fractured the neck of the femur, and made its exit anteriorly, about four inches below the groin. He was admitted into the Elizabeth Hospital, July 5, 1815, much exhausted. In addition to his wounds, which had put on a sloughing appearance, he suffered from an extensive sore on the sacrum, which was caused by lying on the wet ground for five days. Amputation was performed on the 7th, nineteen days after the injury.

In September the wounds were healed, and he was capable of walking three miles at a time, the wooden leg which he had attached to his body being thrown forward by an exertion of the muscles of the trunk. He was placed in the Hotel des Invalides.

Amputation of the Thigh.—11 have been admitted, 9 invalided, 1 died, and 1 remains; 1 only occurred in the upper third, and 10 in the middle third; 1 died. All appeared to have been flap operations, and performed under the influence of chloroform. In 8 instances the integument was not adherent to the bone, and the stumps were very good. In 3 cases the skin adhered very slightly, but the covering was still good. 3 cases remained unhealed. The case at the upper third of the thigh was performed by anterior and posterior flaps, forty-six days after, under chloroform. The wound

healed; stump good; and skin not adherent. The stump was so short that it could not be retained in the bucket by any contrivance of Mr. Heather Bigg. In 8 cases amputation was performed from one to twelve hours after the accident; in 1 case from one to two days; in 1 case from three to seven days; in 1 from eight days to one month. 4 were apparently by lateral flaps, and 6 were by the anterior and posterior flaps, and in the other case the mode of operating is not stated.

The following case, from India, is an example of extensive necrosis of the shaft of the stump of the femur, causing death from exhaustion:—

2nd Battalion Rifles.—Private John Sole, aged 24, wounded November 28, 1857, at Cawnpore, on the right leg, by a grape-shot. Amputation was immediately performed at the middle of the thigh. He was admitted into Detachment Hospital, Gravesend, on July 8, 1858, from on board ship. He was much emaciated. The stump had never been properly healed, and on board ship it sloughed. There were several unhealthy-looking sores on the stump along the line of incision, with a profuse discharge. After being in hospital he improved considerably, sores appearing more healthy, and for a time he gained both flesh and strength. He occasionally complains of great pain in the stump, referring it to the end of the bone. About three weeks before his death a swelling of considerable size appeared on the outer surface of the stump, which burst, and a large quantity of unhealthy pus escaped, and dead bone was detected through the newly opened sore. He now began to lose flesh and strength; the discharge increased from all the sores, appetite bad, stomach very irritable, and bed-sores appeared. He died on September 11, 1858.

All the viscera in the different cavities were healthy. The following is a description of the stump of the femur:—Preparation No. 3625. Right femur showing necrosis of the internal layer of the shaft of the bone, the result of amputation, at the middle third, after a gunshot injury. The preparation exhibits the extremity of the stump, where the saw was applied, in a necrosed state; and it shows the smooth surface left by the saw as plainly as when recently done. This portion consists of the entire thickness of the bone; and there is also a mark on its side where the saw had been accidentally applied, and apparently destroyed the periosteum. A thin lamina of necrosed bone extends upwards, to within an inch of the trochanter major lying encased in the old and new shaft. The shaft of the bone has become expanded and opened out in texture, and

covered with large irregular nodules of new bone. There are three cloacæ on the anterior surface of the femur, and one three inches in length posteriorly at the linea aspera, through which the necrosed portions can be seen. The extremity of the stump presents a large aperture one inch in diameter, leading into the medullary canal; and through it the necrosed portions can be drawn out. The disease seems to have commenced by inflammation in the medullary membrane, producing necrosis of a thin layer of the shaft. The old shaft still remains, and is covered with new bone, except at the very extremity, where the saw was applied; and it is probable that the scratch made with the saw was the primary cause of the death of the bone, and also of the inflammation of the medullary membrane.

The following is an interesting case in several points of view. It shows a wound of the knee-joint, followed by complete disorganization of its structure, demanding amputation three months after the injury. The stump had nearly healed when he was attacked with acute ostitis; and he died from exhaustion forty-four days after the limb was amputated. No. 2940. Femur showing the results of periostitis following amputation at the lower third of the thigh. Nearly ten inches of the shaft of the bone is either necrosed, or in a dying state, and is partially encased in a new bony shell. It also shows that the periosteum has a large share in the generation of new bone.—*Donor, Dr. Williams, Assistant-Surgeon, Rifle Brigade.* This specimen was taken from Private John Walsend, aged 29. Wounded September 8, 1855, by a bullet through the integument of the knee. There being every probability that the joint was injured, perfect rest was enjoined, and leeches, fomentations, &c., applied. These means were ineffectual for restraining the inflammation. The joint appeared quite disorganized, and constantly discharged purulent matter. Amputation was performed on the 2nd November, 1855. On the 15th the wound had almost healed up, when he was attacked by acute ostitis in the shaft of the bone. The great suffering attending the inflammation wore out his strength, and he died on the 16th December, much exhausted and emaciated.

Amputation of the Leg.—18 have been admitted. 17 have been invalided, and 1 remains undisposed of. 11 were performed at the middle third, 4 at the upper third, and 2 at the lower third. 15 appeared to have been performed by the usual flap operation, but in 2 of them a large anterior flap was also made of integuments, in 1 of which the stump was good, and in the other the skin was adherent. 2 were by the circular method, and in both of them the skin was adhe-

ent; but still these two stumps were as good as any of those by the flap. 14 cases were operated upon under the influence of chloroform, and 3 without it. In 8 instances, out of the total 18 cases, were the integuments free, and movable over the crest of the tibia. In 3 cases only were the stumps unhealed. 16 were primary, and 2 secondary amputations.

The following is an interesting example of the foot having been shattered by round-shot, requiring immediate amputation, and where there also existed a simple fracture of the femur of the same thigh, which was not discovered for six weeks after.

78th Regiment.—Private Duncan M'Rae, aged 36, wounded September 24, 1857, at Lucknow, by a round-shot striking the left foot, and carrying it away; at the same time he received an oblique fracture of the lower and middle thirds of the same thigh, which was not detected for six weeks after. The leg was amputated four inches below the knee, by the flap operation, about a quarter of an hour after, under chloroform.

June 11, 1858. There is now a good stump, and the skin does not adhere to the bone. The femur appears to have been fractured obliquely, commencing about four inches above the knee; one extremity of the bone is found to project in front, and a groove is felt to proceed upwards and backwards to the posterior part of the middle of the femur. The knee-joint cannot be completely extended or perfectly flexed, so as to fit a leg stump, in consequence of the contraction of the rectus and vastus muscles. The left femur is an inch and a half shorter than the right, and he states that it only united on the passage home. Invalided August 18, 1858.

One case of amputation at the ankle-joint was performed, eight hours after the accident, in the 75th Regiment; and a very good stump resulted.

With regard to the respective merits of the two methods of amputation at the ankle-joint, viz., that recommended by Mr. Syme, and that by Pirogoff, the profession has not yet come to a decision. Still, there appears to be some advantage in the latter, as being easier of execution, giving a longer stump and firmer support. In Pirogoff's operation, when the ends of the tibia and fibula are sawn straight across, there is always great difficulty, or rather almost an impossibility, in bringing the calcaneum into apposition with the end of the tibia; so that it has been found necessary to remove several slices of the calcaneum with a strong bistoury before the bones could be brought to fit properly. To remedy this difficulty, the following modification was adopted in a case operated upon by Staff-Surgeon Dr. Williamson, on the 24th December, 1858, at Fort Pitt.

The articular extremities of the tibia and fibula were sawn off obliquely, the thick part of the wedge-shaped pieces being posterior. The os calcis fitted admirably. The wound healed rapidly, and a very good, solid stump resulted. The sawing of the ends of the bones obliquely is an improvement, and is well worthy of being generally adopted, as allowing of easy adaptation of the calcaneum to the ends of the leg-bones.

Two cases of amputation through the medio-tarsus arrived from India. In one the operation was performed three hours and a half after the injury from a musket-ball through the arch of the foot. In the other the operation was performed twelve days after the accident. In both cases the stumps were good.

EXCISIONS.

3 cases of resection of joints have arrived from India, viz., 1 of the shoulder, and 2 of the elbow-joint.

Out of a total number of 36 primary resections that occurred in the Crimean war—of which 28 were performed on the superior, and 8 on the lower extremity—of the former 6 died, and of the latter 4 died, viz., 4 cases of excision of the head of the femur.

Shoulder-Joint.—Only one case of resection of this joint was admitted from India; but there is another case where a secondary operation was performed at Fort Pitt, in a patient who is returned as a wound of the joint.

In the Crimean war the head of the humerus was removed twice as a primary operation during the first period of the war, or that ending March, 1855, and 8 times during the second. 1 of the two first-mentioned ended in death, and of the 8 subsequent operations only 1 proved fatal.

The head of the bone was five times removed as a secondary operation, without a single casualty, all the cases except one making good and comparatively rapid recoveries. In addition to these, there was a case in which the head of the bone and a large portion of the scapula, broken into fragments, were removed.

Out of the total number, then, of 16 cases, 3 deaths took place, or 18·9 per cent. Had this operation not been resorted to, amputation at the shoulder-joint, it is believed, would have become necessary in all.

19 cases of resection occurred during the Schleswig Holstein war. Of these, 7 died, and 12 recovered with useful and movable articulations. Of the 7 fatal cases, 2 were primary operations, 2 were performed during the reaction stage, and 3 were secondary resections.

This mortality at first sight appears rather high; but the

conditions under which they were performed must be taken into consideration: they were done, as Esmarch states, under circumstances in which more than a third of all amputations of the arm died. They died of pyemia. Stromeyer and Esmarch both agree that the most favourable time for resection is either within the first twenty-four hours, or when suppuration is fully established.

Abscesses and sinuses are apt to form in the vicinity of the joint, and occasionally cause considerable trouble. A good deal of this depends upon the form of incision selected, so as to allow of the free discharge of pus. Bandens, who has had great experience, recommends the straight incision, so as to avoid cutting the fibres of the deltoid, and it is also necessary to save the long tendon of the biceps, if possible.

Stromeyer advocates the semicircular incision over the posterior surface of the joint, which certainly allows of the free exit of pus; but to cut across the fibres of the deltoid must in some degree impair the limb, although Esmarch states that to cut across the fibres of the deltoid does not much interfere with its after usefulness. Even in those cases where the single incision has been employed, the patient frequently has very little or no power of raising the arm from the side, as was exemplified in the case of Private James M'Donald, 79th Regiment, from the war in India, and others that have come under notice here.

As there are generally two apertures, the surgeon may wish to include them in his incision; but each method will possibly be found to suit in different cases. It is seldom necessary to take away more than the head and a portion of the shaft—perhaps nearly as low as the insertion of the deltoid; but in the Schleswig Holstein war it is shown that as much as four inches and a half were removed from the humerus, and yet a most useful arm remained.

Esmarch makes the following observation:—"It is curious that the operation on the left side seems to give less favourable results than on the right. 6 of 12 died of those resected on the left; 1 out of 7 of those resected in the shoulder on the right side. A similar proportion held good in resections of the elbow, in whom, of those operated upon on the left, 4 in 19, on the right 2 in 20 resections proved fatal. From this, the fatality attending operations on the left arm to that on the right is as 3 to 1; but of course further observations are required to enable conclusions to be deduced."

The following is a primary case of excision of the head of the humerus by one straight incision, from India:—

Private James M'Donald, 79th Highlanders, wounded at Lucknow, March 11, 1858, by a musket-ball, which struck him in the left shoulder, splintering the head and shaft of the humerus to a considerable extent. The ball then passed backwards and downwards, injuring the lower angle of the scapula, and lodged between that bone and the ribs, from which position it was extracted. The shattered parts of the head of the humerus and part of the shaft were excised the same day, by one long incision through the anterior part of the deltoid muscle.

September 26, 1858. There is a large cicatrix in front of the shoulder-joint, and a sinus in its centre, leading down to diseased bone. He cannot raise the arm from the side, on account of loss of power over the deltoid.

He has been sent to modified duty, December 22, 1858.

The two following cases of secondary operations are good examples of perforating gunshot wounds through the head of the humerus, followed by anchylosis of the joint, and the track of the ball remaining carious, necessitating resection of the head of the bone:—

93rd Regt.—Private John Frazer, aged 33, seventeen years' service. Was wounded at Lucknow, March 14, 1858, by a musket-ball, which entered the left shoulder beneath the acromion, and passed backwards, apparently through the humerus, close to its head.

March 2, 1859. There is now anchylosis of the shoulder-joint. Much dead bone in fragments can be felt both from the anterior and posterior openings. General health good.

17th. The head of the humerus was excised, and it shows the track of the ball to be in a carious state. Numerous smaller pieces were also taken away by the gouge. Invalided.

9th Regt.—Private John Morgan, aged 39. Eighteen years' service, ten of them in India. Was wounded in action at Idaliff, in September, 1842, the ball passing through the right shoulder-joint and injuring the scapula. On admission into Fort Pitt Hospital, June 9, 1844, there were three sinuses, two on the anterior aspect of the joint, one opposite the coracoid process, where the ball entered, and the other at the lower border of the axilla, and another on the posterior aspect, the exit of the ball, each communicating with diseased bone. Excision was performed on June 22, 1844, by Assistant-Surgeon Dr. Williamson; a semilunar flap was made of the deltoid, embracing the entrance and exit of the ball; and on attempting to dislocate the humerus, this was found impossible, on account of complete anchylosis of the joint. The humerus was sawn across

about two inches below its head, then cleared of soft parts, and raised; its attachment to the glenoid cavity was broken down by means of cutting pliers. The wound healed quickly, and he gradually regained the power of motion in the arm. No. 2919. Head and neck of the right humerus, which was excised on account of caries consequent on a gunshot wound. The large, deep groove is the track of the ball; it is carious a little below the groove. There is an aperture, about one-fourth of an inch in diameter, situated on the inner aspect of the bone, leading into the medullary cavity. The tubercles and upper part of the shaft are enlarged from depositions of new osseous matter.

Resection of the Shaft of the Humerus.—The following preparation, where three-quarters of an inch of the shaft of the humerus were resected in a case of comminuted fracture eight months after the injury. Death from pyemia one month after the operation. No. 2920. Humerus exhibiting a gunshot fracture below its centre. The end of the lower portion is healthy. There is a superficial exfoliation of a large portion of the outer layer of the shaft of the superior fragment, and also of the medullary canal.—*Donor, C. Reade, Staff Surgeon.* 95th Regt.—Private Thomas, aged twenty-two years, when on duty in the trenches before Sebastopol, was struck by a fragment of shell on the left arm, producing a compound comminuted fracture of the humerus, an inch below its centre, August 18, 1855. On admission into Brompton Hospital, February 18, 1856, the wound had healed, but re-opened on April 18th. At this time firm ligamentous union had taken place between the ends of the fractured bone, and a false joint had been established.

On April 22nd he was in an excellent state of health. It was determined to perform the usual operation for effecting union of the shafts of the bone. A free and deep incision was made in the outer aspect of the left arm, about an inch below the insertion of the deltoid muscle, and carrying it perpendicularly downwards to a level with the condyles, dividing, amongst other muscles, the outer belly of the triceps. Owing to the obliquity of the fracture, and the strength of the ligamentous structure holding the bones together, some difficulty was experienced in passing the knife through the ends of the bones. After further dissection, three-quarters of an inch were sawn off with a metacarpal saw from the fractured ends.

There was but little blood lost during the operation, though several ligatures had to be applied. The patient was under the influence of chloroform. Some considerable time after, he was removed to his ward, and reaction had taken place;

profuse hemorrhage occurred from the wound, probably from deeply seated muscular branches, but was stopped eventually by the application of ice. The limb was placed in a gutta-percha splint. On the evening of the following day the patient was feverish, with hot and dry skin, quick pulse, flushed face, and great thirst. He went on favourably till the 27th, when he had an attack of what is described as intermittent fever. On the 30th he was improving in health, the wound contracting and granulating. Discharge profuse, but healthy. On the 1st, 2nd, and 3rd May he was slightly delirious, and so restless that the limb was constantly disturbed. On the 4th severe dyspnœa came on. The wound still continued to contract, and the discharge was healthy. On the 8th he had a slight attack of shivering. All the ligatures came away. Continued to gain strength up to the 17th. His appetite was enormous; bilious vomiting came on, owing, as was supposed, to the mixture of some incompatible articles of extra diet. On the 19th he passed a restless night. The vomiting stopped, but there was a good deal of nausea. Had a severe attack of dyspnœa, with short cough, and symptoms of congested lungs, especially of the left. Tongue furred; discharge from the wound less. The cough and dyspnœa more severe, and the heart's action very rapid. These symptoms continued to increase, especially those of pericardial effusion, and he died on May 21st.

Sectio Cadaveris, thirty-three hours after death.—Pericardium contained two pints of turbid serum, and was coated with a thick layer of recent effused lymph of a granular appearance, with several patches of vascularity. Valves healthy; both lungs congested; liver healthy. An abscess was found in the external margin of the spleen. *Left Kidney.*—There was an abscess, about the size of a walnut, on its upper and inner surface, immediately below the capsule. There was also a similar abscess in the right kidney. Stomach and intestines healthy; veins not examined.

In the case of Major M., recorded under the head of "Fracture of the Humerus," resection may also ultimately be required.

Elbow-Joint.—Two cases of excision of this joint arrived from India, and are interesting. In one there had also been a fracture of the humerus, and the arm is now in an extended position, and the motion of the elbow-joint is very limited; in the other, the arm hangs powerless by the side, like a flail, without strength to raise the forearm, and he can only move the thumb and fingers slightly; it is so useless and cumber-

some, that he has frequently requested me to amputate the arm; this has not been done, because, when he keeps the arm in a sling, he has still the use of the fingers and thumb. In this case a very large extent of the ends of the bones of the elbow-joint must have been removed, and also the tubercle of the radius, with the attachment of the biceps; the distance between the bones is very great, and there does not appear to be ligamentous matter effused between the bones. The man himself, when out of hospital, does not use the sling; consequently, the arm is so much in his way that he fell down when under the influence of liquor, and injured it very much. In both these cases the operation was performed by the H incision.

The extent of the articular ends of the bones that can be removed, compatible with a useful limb, should be such as to allow of free motion between the ends of the bones, so that there can be no fear of their becoming jammed. It appears that about one inch or one inch and a half, of all the three bones composing the joint, should be always about the extent removed.

When only a small extent of the articular ends of the bones is removed, anchylosis is almost certain to be the result, from the extremities of the bones becoming jammed, and preventing free motion even from the first.

Partial resection of the shoulder and elbow-joints does not permit of nearly so much motion as where the entire articular surfaces are removed, and they generally terminate in partial or complete anchylosis, as occurred in a case on which I operated lately; and there is one arrived from India, where the joint is anchylosed, with the arm in a straight position, and hanging quite useless by the side, but, as already stated, there was also a fracture of the humerus in this instance.

In all cases of gunshot wounds of the elbow and shoulder-joints, where there is direct injury of the capsule, with fracture or splintering of the bones forming the articulation, primary resection should, as a rule, be performed on every occasion, as being more certain to terminate in a speedy cure, and to leave a much more useful limb, with a good artificial joint, than where the case is left to nature, when the track of the ball and joint itself generally become carious, and continue to discharge for years, ultimately requiring resection to be performed.

The cases of Frazer and Morgan are examples of the above remark in reference to the shoulder-joint; and there are several cases of wounds in the elbow and shoulder-joints from India where complete anchylosis has taken place, and which would have much more useful limbs had excision been performed with the usual amount of success.

5th Regt.—Private Thomas Johnstone, aged 30, wounded at Mussleagh, by a sword-cut in five different places, March 19, 1858. One wound opened freely into the right elbow-joint, and severely wounded the radius and humerus, necessitating excision, by the H incision, of this joint, which was performed two days after; this had been deferred until then, on account of the movements of the forces. Another shot carried away the left thumb, which was amputated.

September 26th. The arm hung powerless by his side, and he has not the power of raising the forearm; he can use his fingers; the ulnar nerve seems to have been injured, as he has not the feeling of the ring and little fingers; when his arm is supported in a sling he will still have a useful forearm. Invalided, December 29, 1858.

75th Regt.—Sergeant John M'Donald, aged 26, wounded at Delhi, June 15, 1857, by a musket-ball, in the posterior part of the left elbow-joint. Excision, by H incision, of the fractured parts was immediately performed, and several pieces of bone came away at the time, and several pieces came away afterwards.

July 20, 1858. Wound healed; arm in an extended position, and can be only slightly bent; he cannot open the little and ring fingers, and the others are also powerless. The arm is about three inches shorter than the right. September 8, 1858, sent to modified duty.

In the Crimean war "22 operations in all were done on the elbow-joint, of which 3 ended fatally, and 2 more deaths took place after secondary amputation; in all a total of 5 deaths, or 22 per cent. of the cases treated. This per-centage slightly exceeds that of resection of the shoulder-joint, but in both instances resection afforded a much more favourable result as to the mortality, than amputation."

In the following case, on which I recently operated on account of disease,—and where I took away the whole of the ulna, two inches of the humerus, and the head and neck of the radius close to the tubercle,—the man can now (four months after the operation) bend his forearm, raise his hand behind his head, and lift a twenty-eight pound weight from the ground; he can also pronate and supinate the hand; there is no anchylosis of the wrist-joint, and he can use his fingers well.

This case also shows the large amount of bone which can be removed from the upper extremity compatible with the patient regaining a very useful arm and hand; and although not resulting from a gunshot wound, still it appears of sufficient interest to be given here.

Staff Armourer Sergeant H. W., aged 26, two years and a half in the service, of which five months were in China. He is of healthy appearance. Was admitted into the general hospital, Hong Kong, in August, 1857, immediately after his arrival from England, with symptoms of acute hepatitis and pleuritis. Active depletion was had recourse to, and calomel and opium administered, which produced salivation, and the disease was arrested ; on the 3rd September a large phlegmonoid tumour was found near the elbow-joint, which was opened, and a large quantity of matter evacuated. From that time the ulna became permanently enlarged, extensive necrosis took place, and a few spiculæ of bone came away. He was admitted into Fort Pitt Hospital on the 1st of August, 1858, with numerous sinuses along the inner side of the left ulna, extending down to the diseased bone, and the probe also entered from behind into the elbow-joint. The disease in the ulna was imagined to terminate about an inch above the wrist, but to extend into the elbow-joint. The radius did not appear to be engaged in the disease. The patient's general health was good.

August 30th. The whole of the ulna, as well as an inch and a half of the extremity of the humerus, and also the head and neck of the radius, were removed by a single incision along the posterior and inner side of the forearm by Staff-Surgeon Dr. Williamson. The skin was dissected back, and the ulnar nerve cleared away from the internal condyle. The disease was found to extend the entire length of the ulna. An endeavour was at first made to disarticulate at the wrist by cutting the lower attachments of the ulna ; but it was found to be much more easily accomplished by cutting the triceps and lateral ligaments, and getting into the elbow-joint. The entire ulna was now disarticulated and dissected out. An inch and a half of the ends of the humerus and radius were then removed. No vessels required to be tied. The wound was left open for three hours, when sutures were inserted, and the arm placed upon a straight splint.

September 1st. The arm was placed in a semi-bent position, and laid upon a gutta-percha splint.

5th. The whole of the wound had healed by the first intention, and the sutures were removed.

8th. The splint was taken away, and he could move his fingers and hand, and get his left hand to the mouth with the assistance of the right, but could not do so of his own accord.

10th. The wound completely healed twelve days after the operation.

12th. He continues to move the joint and use his finger ;

but is only just able at present to raise the forearm, showing that he is beginning to regain the power over the biceps muscle. The arm is, however, small and weak. There is every prospect of the patient having a very useful arm and hand. His general health is good, and he is out of bed, and going about.

On examination of the parts removed, it was found that the whole of the ulna was much enlarged, from deposition of new osseous matter, enclosing several portions of necrosed bone. The whole of the cartilages covering the ends of the bones forming the elbow-joint were absorbed, and the bones carious.

It is not often that a case occurs where the disease is entirely confined to the ulna and bones of the elbow-joint. With regard to the operation, it was found much more easy to disarticulate from the elbow than from the lower extremity of the ulna, and care was required to avoid cutting the arteries and nerves by keeping close to the bone. It is also worthy of remark that no vessel required to be tied, although they must have been increased in size to supply the enlarged ulna. The rapidity with which the wound healed is also remarkable.

The following is a case of partial excision of the wrist-joint :—

78th Regt.—Corporal David Fotheringham, wounded July 12, 1857, by a musket-ball in the right wrist-joint. The ball entered on the anterior surface, and passed directly out on the posterior. Several small pieces of bone were taken away at the time. The hand has been kept in a straight splint ever since, and he has now nearly lost the use of the fingers. The wrist-joint is much enlarged; the aperture of entrance of ball is long since healed,—that of exit still remains open; diseased bone can be felt.

May 10, 1858. Diseased bone taken away by the gouge.

June 2nd. Invalided. General anchylosis of the carpal bones. Wound nearly healed; has the use of the fingers to some extent.

Note.—Post-mortem appearances, furnished by Mr. Birkett, in the case of Private James Beahan, who was admitted into Guy's Hospital, December, 1858, and died February 13, 1859, whose case is noticed at page 352 of the last volume.

"The peritoneum and the abdominal viscera were healthy, except adhesions between the spleen and left kidney and colon. In the left loin a fistulous opening led directly into the descending colon; it passed immediately below the lower edge of the left kidney. A sinus extended downwards behind the left colon, as far as the ilium. A small piece of lead was fixed

in the capsule of the spleen, but gave rise to no disease. Parts of the two lowest left ribs were necrosed. The lumbar vertebræ were slightly curved to the right side. A hole, with smooth edges, was seen between the left transverse processes of the second and third lumbar vertebræ. It corresponded to the inter-vertebral foramen, but was larger than natural, and admitted the finger into the vertebral canal. From this hole the bullet had, doubtless, made its exit into the colon. It was difficult to find the point of entrance of the ball, as the original wound had healed, and the tissues around were much indurated. The cicatrix in the skin of the lumbar region was seated a little to the right of the spinous process of the fourth lumbar vertebra; and on dissecting down to the arches, it was evident that the ball had entered between the arches of the third and fourth lumbar vertebræ, fracturing their arches, and, passing along the third lumbar, made its exit between the tranverse process of the second and third. The arches of the third and fourth lumbar vertebræ, which had probably been broken, were now anchylosed."

It will be remembered that the ball struck him whilst he was crawling along the ground, and it took an upward direction. It entered to the right side of the spinous process of the fourth lumbar vertebra, passed behind the body of the third lumbar and the spinal cord, and, emerging between the transverse process of the second and third lumbar on the left side, entered the left or descending colon, and was voided per anum.

For some weeks after the injury fæcal matter passed by the primary wound, but at last this entirely healed. For a few weeks, although suffering pain, he was free from any fæcal fistula. An abscess then formed in the left loin, which broke, and continued open to the end. Through this, fæces continually passed. Both kidneys were very large, white, and granular. The connective tissue of the body generally was infiltrated with serum.

It is curious to remark the numbers that are wounded, and the proportion that survive under the different classes of gunshot wounds. Take, for example, the total number of cases that arrived from India under wounds of the three large cavities :—

Head, 15, or 2·48 per cent. of the total that arrived, viz., 603. Chest, 19, or 3·16 per cent. Abdomen, 8, or 1·15 per cent.

The numbers from India do not represent the frequency or the mortality of gunshot wounds in those different regions;

but from April 1, 1855, to the end of the Crimean war,[a] the total wounded was 7153. Of these, in the—

Head, 851 treated, or 11·9 per cent. of the entire wounded; 170 died, or 20 per cent. of those treated. Chest, 420 treated, or 5·8 per cent. of the entire wounded; 118 died, or 28·1 per cent. of those treated. Abdomen, 235 treated, or 3.28 per cent. of the entire wounded; 131 died, or 55·7 per cent. of those treated.

From this, it would appear that gunshot wounds of the head (in siege operations, at least) are twice as frequent as those of the chest, and more than three times compared to the abdomen; while wounds of the chest are more than 8 per cent. more fatal than the same injury in the head; and gunshot wounds of the abdomen are 27 per cent. more fatal compared to those of the chest.

On comparing the frequency among the cases from India of—

Gunshot wounds of the superior extremity, 159, or 26·36 per cent. of the total that arrived. Amputation of the superior extremity, 127, or 21·22 per cent. Total, 286, or 47·42 per cent.

Gunshot wounds of inferior extremity, 162, or 27·03 per cent. Amputation of the inferior extremity, 34, or 5·80 per cent. Total, 196, or 30·84 per cent.

From this it is seen that there is only an excess of 3 in the wounds of the lower over that of the upper extremity; but the proportion of successful amputations is very much in favour of the superior extremity, there being 83 more than in the lower extremity. The number of amputations of the arm are 46, and of the thigh, 11. This difference is to be attributed to the greater mortality in amputation of the thigh over that in the arm. The amputations of the forearm and leg are very nearly the same, being 19 of the former, and 18 of the latter. There are 53 amputations of the fingers and thumbs, while there are only 2 of the toes; still, these minor operations raise the proportion of the total number of successful amputations of the superior over the inferior extremity.

In the Crimean war there were—

Gunshot wounds of the superior extremity, 2083 treated, or 30·2 per cent. of the entire wounded; 47 died, or 2·9 per cent. of those treated. Gunshot wounds of the lower extremity, 2198 treated, or 31·76 per cent. of the entire wounded; 166 died, or 8·3 per cent. of those treated.

Had the result of the operations performed been added, the difference would have been increased in a very material degree.

[a] Vide Report.

The number of cases that occurred under the remainder of the classes is very small, as the following extract from the return of the India cases will show :—

Gunshot wounds of the face, 22, or 3·64 per cent. of the entire wounded.

Ditto, neck, 7, or 1·15 per cent.

Ditto, back and spine, 9, or 1·49 per cent.

Ditto, perineum, genital and urinary organs, 3, or 0·49 per cent.

Ditto, with direct penetration of the larger joints, 8, or 1·32 per cent.

Ditto, with direct injury of the large arteries, not being at the same time cases of compound fracture, 0.

Ditto, with direct injury of the larger nerves, not being at the same time cases of compound fracture, 6, or 0·99 per cent.

Sword and lance wounds, 12, or 1·99 per cent.

Bayonet wounds, 2, or 0·33 per cent.

Miscellaneous injuries received in action, 9, or 1·49 per cent.

On referring to the "Return of the Wounded from the Crimean War," nearly the same proportion under these classes is found to hold good :—

Gunshot wounds of the face, 533 treated, or 7·45 per cent. of the entire wounded; 14 died, or 2·60 per cent. of those treated.

Neck, 128 treated, or 1·79 per cent. of the entire wounded; 4 died, or 3·12 per cent. of those treated.

Back and spine, 326 treated, or 4·55 per cent. of the entire wounded; 45 died, or 13·49 per cent. of those treated.

Perineum, genital and urinary organs, 55 treated, or 0·76 per cent. of the entire wounded; 17 died, or 30·96 per cent. of those treated.

With direct penetration or perforation of the larger joints, 121 treated, or 1·65 per cent. of the entire wounded; 25 died, or 20·66 per cent. of those treated.

With direct injury of the larger arteries, 12 treated, or 0·16 per cent. of the total wounded; 8 died, or 66·66 per cent. of those treated.

With direct injury of the larger nerves, 22 treated, or 0·30 per cent. of the total wounded; 8 died, or 36·36 per cent. of those treated.

Sword and lance wounds, 7 treated, or 0·09 per cent. of the total wounded; 1 died, or 14·28 per cent. of those treated.

Bayonet wounds, 36 treated, or 0·50 per cent. of the total wounded; 4 died, or 11·11 per cent. of those treated.

Miscellaneous wounds received in action, 126 treated, or 1·62 per cent. of the total wounded; 6 died, or 4·76 per cent. of those treated.

RETURN OF CASES *landed at Gravesend from the* 31*st March*, 1859, *to* 30*th June*, 1859.

Classification and Specification of Wounds and Injuries.	Landed at Gravesend.	Discharged to Duty.	Discharged to Modified Duty.	Invalided.	Died.	Remaining undisposed.
1. Gunshot Wounds of the Head:—						
1. Contusions and simple flesh-wounds.						
2. With contusion or fracture of the cranium, ...	4	2	. .	2		
3. With depression, or displacement of both tables, ...	2	. .	. .	2		
Total, . . .	6	2	. .	4		
2. Gunshot Wounds of the Face:—						
2. Penetrating, perforating, or lacerating the bony structures, without lesion of important organs, ...	1	1				
3. Gunshot Wounds of the Neck:—						
1. Simple flesh contusions and wounds, .	1	1				
4. Gunshot Wounds of the Chest:—						
1. Simple flesh contusions and wounds, .	2	2				
2. With injury of bony or cartilaginous parietes, without lesion of contents, .	1	1				
5. Perforating contents, ...	1	1				
Total, . . .	4	4				
7. Gunshot Wounds and Contusions of the Perineum and Genital Organs, not being at the same time Wounds of the Perineum, .	1	. .	. .	1		
8. Gunshot Wounds of the Upper Extremities:—						
1. Simple flesh contusions and wounds, .	11	5	2	1	. .	3
2. With contusion and partial fracture of long bones, including fracture of the clavicle and scapula, ...	14	4	2	5	. .	3
4. With compound fracture of humerus, .	4	. .	2	1	. .	1
,, ,, radius, . .	1	. .	1			
,, ,, ulna, . .	2	2				
5. Penetrating, perforating, or lacerating the several structures of the carpus and metacarpus, ...	2	. .	2			
6. Dividing or lacerating the several structures of the carpus and metacarpus, .	1	1				
Total, . . .	35	12	9	7	. .	7

Classification and Specification of Wounds and Injuries.	Landed at Gravesend.	Discharged to Duty.	Discharged to Modified Duty.	Invalided.	Died.	Remaining undisposed.
9. Gunshot Wounds of the Lower Extremities :—						
1. Simple flesh contusions and wounds, .	22	10	1	3	. .	8
2. With contusion and partial fracture of long bones, or of the bones of the pelvis, in their relation to the lower extremities, ...	14	2	1	3	. .	8
3. With fracture of long bones by contusion from round shot, ...	2	. .	1	1		
4. With compound fracture of femur, . .	4	. .	. .	4		
,, ,, tibia only,	1	. .	. .	1		
5. Penetrating, perforating, or lacerating the several structures of the tarsus and metatarsus, ...	2	1	. .	1		
Total, . . .	45	13	3	13	. .	16
11. Gunshot Wounds with direct penetration or perforation of the larger joints, . . .	2	. .	. .	2		
12. Gunshot Wounds with direct injury of the larger nerves, not being at the same time cases of compound fracture, ...	2	1	. .	. .	. .	1
13. Sword and Lance Wounds, ...	23	3	3	8	. .	9
15. Miscellaneous Wounds, ...	2	2				
Total Wounds received in Action, ...	122	39	15	35	. .	33

RETURN *of Capital Operations.*

Description of Operation.	Landed at Gravesend.	Discharged to Duty.	Discharged to Modified Duty.	Invalided.	Died.	Remaining undisposed.
AMPUTATIONS.						
Upper extremity.						
Arm, ...	4	. .	. .	4		
Forearm, ...	1	. .	. .	1		
Thumbs, ...	1	. .	1			
Fingers, ...	7	. .	4	2	. .	1
Lower Extremity.						
Thigh, at middle, ...	3	. .	. .	3		
Leg, ...	1	. .	. .	. .	. .	1
Toes, ...	1	. .	1			
Amputations, since March 31, 1859, ...	18	. .	6	10	. .	2

Summary.

	Landed at Gravesend.	Discharged to Duty.	Discharged to Modified Duty.	Invalided.	Died.	Remaining undisposed.
Amputations, since March 31, 1859, ...	18	. .	6	10	. .	2
Wounded, since March 31, 1859, ...	122	39	15	35	. .	33
Total wounded, since March 31, 1859, ...	140	39	21	45	. .	35
Total wounded previous to March 31, 1859, .	603	193	67	263	7	73
Total landed at Gravesend, up to June 30, 1859,	743	232	88	308	7	108

It is probable that, for the next twelve months or more, a few men may still be coming home from India, viz., those who were only slightly wounded and had been sent to duty, and subsequently invalided either for the wound or for disease; but nearly all must have now arrived.

The greater number of the cases under the different divisions are of such a slight nature that they do not require notice.

Class I.—Gunshot Wounds of the Head.

2 cases of depression and displacement of both tables of the skull were invalided, on account of giddiness and inability to stand the heat of the sun.

Class IV.—Gunshot Wounds of the Chest.

There is one case where the ball seems to have hit the sternum and to have dropped off, although the document states that the ball entered the left side, and still remains in the cavity of the chest. Great dyspnœa followed; bubbles of air were forced through the wound, and blood in considerable quantity was brought up by fits of coughing. Has been sent to duty.

In the following case the ball perforated the lung; the patient recovered, and has been sent to duty.

Private Thomas Powell, aged 27, 9th Lancers; was wounded September 14, 1857, by a bullet, which entered the right side of the chest, $1\frac{1}{2}$ inches below the sternal extremity of the clavicle, and passed out over the centre of the body of the right scapula, passing between first and second ribs; several fragments of bone came away from the front wound. The man says violent inflammation of the lungs followed.

June 7, 1859. Wounds soundly healed, but right side hardly expands so much as left; health seems good. Sent to duty.

Class VII.

1 man was admitted under this head. He was wounded on the 13th September, 1857, at Delhi, by a fragment of a shell. The posterior part of the scrotum was torn away, and the testicles, which were laid bare, subsequently sloughed.

April 27, 1859. Complains of pain in back when he walks far, and has difficulty in retaining his urine, especially at night. The right cord can be felt, but ends abruptly. A fragment of the left testicle, about the size of a hazel-nut, can be felt attached to the left cord. Invalided.

Class VIII.—Gunshot Wounds of the Upper Extremities.

The cases of compound fracture of the humerus, of the radius, and of the ulna were soundly healed, and the patients had good useful arms.

Class IX.—Gunshot Wounds of the Lower Extremities.

Division III.—*With Fracture of Long Bones by contusion of Round Shot.*

2 cases of simple fracture of the long bones of the lower extremity were admitted. One man received a contusion from a spent round shot, on the 5th May, 1858, which fractured the lower third of the right femur, but inflicted no wound: a simple fracture. The limb is now quite good, but $1\frac{1}{2}$ inch shorter than its fellow. Invalided April, 1859.

In the other case, a spent cannon-ball struck the right leg, a little above the centre of the right shin, fracturing both tibia and fibula; skin not broken. There is now slight irregularity of the tibia, and the limb is somewhat wasted, but is straight and in a good position. Shortening of limb to the extent of about an inch; rigidity of ankle-joint. Invalided April, 1859.

Division IV.—*Compound comminuted Fractures of the Femur.*

4 cases have been admitted since March, 1859, of which the following are the detailed histories:—

In the first case, it is impossible at the present time, now nineteen months after the injury, for a surgeon to say whether immediate amputation ought to have been performed, but it appears to testify to the great advantages and superiority of the

dooley over every other means of conveyance for cases of gunshot fracture of the femur; as there can be no question that this patient could not have survived such repeated removals by any other method of conveyance.

1st Battn. 8th Regt.—Private William Cunningham, aged 31, on the 14th September, 1857, at Delhi, in the trenches, received a gunshot comminuted fracture of the left femur; the ball entered on the outer aspect, some $7\frac{1}{2}$ inches below the trochanter, and has never been found. He states that he was at once placed in a dooley, and the limb shortly after put up in a long splint; was twice moved to different houses which were set apart as hospitals at Delhi, and at the expiration of three months he was sent to Umballa in a dooley, a distance of eleven days' march, without any splint, the bone still ununited; and, according to the patient's statement, the splint never was replaced. The upper fragment of the femur projected in front, and protruded through the integuments, and a portion came away by necrosis; extensive abscesses formed, and the limb was left perfectly free of any apparatus, as the patient was in such a weak and exhausted condition that it was not expected he would survive; and it was thought that he was not capable of bearing amputation of the limb. He states, that while at Umballa the fracture united, and after being there two months he was sent to the Hill Station at Landaur, in a dooley.

Fort Pitt, 27th April, 1859.—The outer fragment projects outwards and forwards, and is covered by integuments; the limb is $4\frac{3}{4}$ inches shorter than the opposite one; the toes are pointed downwards, and the limb wasted. There is an open sinus at the seat of the fracture, which extends deep below the fragments, although bare bone cannot be felt. The knee-joint is stiff, and the ligamentous structure rigid from want of use; but the leg is in a straight position.

20th May.—The sinus has healed, and the patient can bear his weight upon the limb. He has been fitted with a high-heeled boot with a long thigh-piece, &c., attached, by means of which apparatus he is able to walk tolerably well, with the assistance of a stick. Invalided May, 1859.

53rd Regt.—Private Samuel Shaw, aged 36, was wounded February 3, 1858, near Lucknow, by a musket-ball, which entered the outer side of left thigh, about 4 inches above the knee, fractured the femur, made its exit on the inner side, and then entered the opposite thigh, whence it was removed by incision from near the patella.

May, 1859.—Left thigh $1\frac{1}{2}$ inch shorter than the opposite,

and much atrophied, with two cicatrices adherent to the bone; the wound has only very lately healed, and the knee is stiff; he has a very useful limb, and is able to walk well with a high-heeled shoe. Invalided 13th June, 1859.

1st Battn. 24th Regt.—Private George Williams, aged 29; ten years' service; wounded at Umritzir on the 18th October, 1857, by a musket-ball, which entered the right groin a little external to the vessels, and came out just posterior to the great trochanter, fracturing the femur; many fragments of bone came away from the opening.

June, 1859.—Aperture of entrance and exit healed, but leg shortened $1\frac{1}{2}$ inches; a sinus exists on the outer side of the hip, leading down to diseased bone; has just recovered from an attack of erysipelas of this thigh; the right leg is $1\frac{1}{2}$ inches shortened; there is every prospect of the patient having a very good and useful limb; is able to walk about upon it, with the assistance of a stick. Invalided 29th June, 1859.

86th Regt.—Private J. Curtis, aged 35; fourteen years' service; wounded November 23, 1857, at Mendeswor, by a musket-ball, which entered three inches below, and a little internal to the anterior superior spinous process of the ilium, and made exit over the trochanter.

June 28, 1859. Fracture of the left femur at its upper third; bone united; limb $3\frac{1}{4}$ inches shortened; some loose, dead bone can be felt through the unhealed wound of exit; has now a very good, useful limb, and can walk well.

June 29, 1859. Invalided.

This makes 12 undoubted cases of compound comminuted fracture of the femur that have arrived in England during the whole period included in this Report. Of these, 1 died at Gravesend (Walmsley), and 1 (Cunningham) where the cure is complete, but there is considerable deformity of the limb: deducting the death, there remain 11 cases with good, useful limbs out of the total landed, viz., 743, or 1·49 per cent. This is a large proportion compared with the results of the Crimean war, viz., 8 out of 2296, or 0·34 per cent.; and if the case of Moore, which is detailed below, was returned under this head, there would be a total of 13 cases[a].

When the bones of the leg are fractured so as to require

[a] Four cases of gunshot wounds arrived from the war in Persia, all belonging to the 64th Regiment; on the termination of this war the 64th Regiment sailed for Calcutta, and formed part of the force under General Havelock in his advance on Cawnpore and Lucknow. These four cases, although actually wounded in Persia, are included in this return as from the mutiny in India; and one of them, M'Carter, is a case of compound comminuted fracture of the femur.

immediate amputation, this operation will, in all probability, have to be performed in the thigh. If, therefore, a certain number of thigh amputations are admitted, it may be inferred that the greater number had been originally wounds of the leg, and not cases of compound fracture of the femur demanding amputation.

14 amputations of the thigh have arrived from India; of which 13 are returned as in the middle third, and 1 in the upper; or 1·88 per cent. of the total 743 wounded. As stated at pages 41, 48, and 50, the success of the cases from India with this description of fracture is not to be imputed to the difference of the bullets, but to the better means at hand for treating both compound fractures of the femur and amputations. It also appears to be the better practice not to be over-anxious about the length of the limb, but rather to leave it almost entirely without splints.

In the following case there appears to be some doubt as to whether the femur was actually fractured, or whether it was only a partial fracture; although, from the direction of the ball, and the state of the limb since the injury, there is strong presumptive evidence that there was a complete fracture, either through the neck of the bone or through the trochanter, but without displacement, as now there is almost no shortening, not more, or perhaps so much, as half an inch. This man is, therefore, returned under Class IX., Division 2, but his case is detailed in this place. Of the 12 cases returned there can be no doubt that the femur was fractured.

24th Regt.—Private James Moore, aged 33, thirteen years' service, was wounded by a musket-ball on July 7, 1857, at Jhelum, which entered the left groin, about two inches below Poupart's ligament, and about two and a half inches external to the femoral artery, and passed out an inch and a half behind, and a little below the great trochanter, injuring the bone. Fragments of bone have continued at various times to come away. He has been at Gravesend since August, 1858, since which no dead bone has come away, but "he has had a pretty regular monthly accession of ague," with hepatic complication, lasting for a few days, and followed by formation of matter in the seat of the wound; and sinuses, which have re-opened, discharge for a short time, and then quite heal up, to break out again on the next disturbance of the general health. There is now considerable phlegmonous inflammation around the wound and whole of upper part of thigh, and necrosed bone exists in considerable quantity. General health good.

Class XI.—Gunshot Wounds, with direct Penetration or Perforation of the larger Joints.

Two cases were admitted, viz., one of the elbow-joint, which is now anchylosed; but the patient has a very useful hand: the other was in the knee. The following is the history of the case:—

14th Light Dragoons.—Private James Ball, aged 30, was wounded at Muddenpore Pass on 3rd March, 1858, by a musket-ball, which entered the outer side of left knee, and was cut out about two inches posteriorly. Joint primarily injured? The surgeon says, No; but the contrary seems probable. Free incisions around the joint were subsequently required. The limb can now only be flexed to a slight extent, but the joint has lateral motion in a direction inwards to middle line.

Invalided June 29, 1859.

Class XII.—Gunshot Wounds with direct Injury of the larger Nerves, not being at the same time cases of Compound Fracture.

2 were admitted, and 1 sent to duty.

42nd Regt.—Sergeant Joseph Mumford, aged 28, on March 11, 1858, received a wound from a musket-bullet (round), which entered about an inch and a half from the sternal articulation of the clavicle of right side, and was extracted from the left side of the neck behind, about the centre of the clavicle. The trachea was injured, and he spat blood for seven or eight days, and the air came out through the hole of entrance. The cervical plexus has been injured; the trachea, in the course of the wound, is tender, the opening of exit very much so, and all the fingers appear quite useless: they are fixed, apparently anchylosed in a straight position, but any attempt at bending them causes intense pain in the course of the median nerve. The hand is cold, and affected with nervous tremor; all the fingers are numb, but the motions and sensation of the thumb are good.

May, 1859. Duty. Results of wound probably not to a disqualifying extent.

Art. IV.—*Clinical History of the Eastern Division of the Royal Maternity Charity, during the Year ending September* 30, 1858[a]. By Robert Barnes, M. D., Vice-President of the Obstetrical Society of London; Honorary Member of the Dublin Obstetrical Society; Physician to the Royal Maternity Charity; Assistant Obstetric Physician to the London Hospital, &c., &c.

The important share taken by the Royal Maternity Charity in the obstetric experience of London leads me to believe that a clinical history of its proceedings during the last year will present several points of interest. For example, this experience may be expected to represent to a certain extent the parturient history of London, and thus to furnish a standard of comparison with other places. The patients being all attended at their own homes, we shall obtain the means of contrasting the relative advantages of hospital and home obstetric institutions; and several reflections and inquiries of an important social, medical, and administrative nature are suggested.

The patients of the Royal Maternity Charity are attended by a staff of midwives whose competency is certified, after instructions, by my colleague, Dr. Hall Davis. The field of its operations is divided into three Districts, an Eastern, a Western, and a Southern. Each district is placed under the superintendence of a physician, who nominates as his assistants medical practitioners, conveniently located to act for him in cases of emergency. The Eastern District, which is placed under my charge, is by far the most active. It does two-thirds of the entire work of the Institution; and constitutes, I believe, by itself the largest obstetric charity in London. In the year ending with September, 1858, 2418 deliveries took place in this division. The total registered births in all London during 1858 amounted to 88,620. Thus one labour in 36, or nearly 3 per cent. of the whole obstetric work of the metropolis, would appear to be carried out in my division of the charity. This experience is equal to, or surpasses, that of many considerable towns. It is nearly half that of such capitals as Edinburgh.

Carefully refraining from treading too far along the inviting and seemingly luminous, but most treacherous path of vital statistics, I purpose to adduce the definite numerical results of the Royal Maternity Charity in such a manner as to illustrate certain defects in our Registration system. The Registration of Births in England is not compulsory; one result of this I have elsewhere shown to be, that the Registration is not complete, not even as regards the births of living children.

[a] Read before the Dublin Obstetrical Society.

Further, as no account is taken of the births of dead children, we fail to arrive at any correct idea of the total number of deliveries; hence the public statistics upon obstetric questions are vitiated. In the first place, the returns do not represent, as it is assumed they do, the number of labours, but the number of registered live-births. Secondly, presuming that the deaths in childbed are all correctly registered, we want one element which is essential to the estimation of the proportion of deaths in childbed. Thirdly, we have no information as to the proportion that dead-born children bear to live-born. Fourthly, we have no means of investigating the causes of still-birth, a subject which a little reflection will show to be of the highest medical, social, and sanitary interest. Fifthly, the statistics, so often quoted, of illegitimate births are purely conjectural and without value.

Here I may remark, that the experience of an institution working, like the Royal Maternity Charity, over an extensive area of the town and at the homes of the patients, must give a more accurate representation of the ordinary parturient history of the community than can be drawn from the records of lying-in hospitals, where almost all things that surround the puerpera are exceptional: this difference will be borne in mind in the subsequent comparisons.

Table I.—*Illustrating the Proportion of Still-Births to Total Births*[a].

	Total Labours.	No. of Dead-born.	Proportion of Dead-born.	Dead, putrid.
Royal Maternity Charity, London, 1856-7-8,	10,561	308	1 in 34	
Maternity and Dispensary, Edinburgh, 1858,	883	62	1 in 14	
Lying-in Hospital, Dublin, 1757 to 1847,	156,100	9291	1 in 17	
Ditto, 1847 to 1854,	13,748	968	1 in 14	487
Birmingham Lying-in Hospital, 1858, . .	1049	59	1 in 18	

Table II.—*Showing Proportion of various Operations, &c., in Dublin Lying-in Hospital and Royal Maternity Charity.*

	Craniotomy.	Forceps.	Turning.	Placenta Prævia.
Dublin Hospital, 1847 to 1854,	130, or 1 in 106	200, or 1 in 69	66, or 1 in 208	24, or 1 in 571
Royal Maternity Charity, Eastern Division, Dr. Barnes, . . .	4, or 1 in 600	6, or 1 in 445	7, or 1 in 316	9, or 1 in 268

[a] The figures relating to the Edinburgh Institution were kindly supplied to me by Dr. Matthews Duncan; those from Birmingham by Dr. Elkington.

Table III.—*Illustrating Rate of Mortality in Childbirth, distinguishing Puerperal Fever, in Hospital and Home Practice.*

	Total Deliveries.	Total Deaths	Rate of Mortality.	Deaths from Puerperal Fever.	Rate of Mortality from Puerperal Fever.
All London, 1858, . .	87734[a]	430	1 in 204	165	1 in 502
Royal Maternity Charity, Eastern Division, 1857, 1858, Dr. Barnes,	2418	7	1 in 345	4	1 in 600
All Edinburgh, 1858, .	5186[a]	28	1 in 183	16	1 in 321
Hospital, Edinburgh, . .	277	3	1 in 92	Not specified.	
Lying-in Hospital, Dublin, from 1847 to 1854,	13748	163	1 in 84	70	1 in 197
Lying-in Hospitals, London, 1858,	. . .	11			

In Table I. I have brought together illustrations of the proportion of dead-born to live-born children. In the Royal Maternity Charity one child out of every 34 is still-born; in the Maternity and Dispensary at Edinburgh 1 in 14; in the Birmingham Lying-in Hospital, including in and out patients, 1 in 18; in the Dublin Lying-in Hospital, during the first ninety years of the existence of this celebrated Institution, 1 in 17; and during the seven years from 1847 to 1854, the proportion was 1 in 14.

1. Applying these facts to the solution of the question of the unknown number of dead-born children in London, we find, taking the Royal Maternity experience, that since about 3 per cent. of the total births are dead-born, we must multiply the registered births in London by 1·03, which would give 91,278, from which, if we deduct 1 per cent. for twin-births, the number of deliveries would be 90,365. This is still liable to the fallacy that an unknown number of living children escape registration.

2. From this estimate it appears that 2658 still-births (no account taken of abortions) take place annually in London. Of these 2658 deliveries, the public has no information; that is, we know nothing of the circumstances under which 2658 women brought forth; it is not known how many were unassisted by competent skill; it is not known how many of the children thus ignored perished from causes connected with the act of delivery; it must, indeed, remain a matter of conjecture whether this number does not include many infants who

[a] Deduction from registered births of 1 per cent. made for twin births.

perished from neglect, or more criminal default, within a few hours of birth. The medical statistician is left to regret the loss of many facts that might prove of signal value as indications in preventive medicine; the statesman must contemplate with alarm an uncertain amount of social misfortune, of depravity, and of crime, that lies enveloped in mystery, and therefore beyond relief or restraint.

I refrain from pursuing this speculation through its applications to Edinburgh and Dublin, or the kingdom at large. In Ireland there is, unfortunately, at present no registration. I will merely refer to the great difference between the proportion of dead to live-born children observed in the Dublin Hospital and in London. The wide distance between 1 in 34 in London, and 1 in 14 in Dublin, may raise a doubt as to the correctness of the London returns; of the correctness of the Dublin returns there can be none. But there is a remarkable circumstance, which the admirable perfection of the records of the Dublin Hospital supplies, that throws light upon the discrepancy. A record is kept of the children born dead and *putrid*. Now the proportion of putrid children alone is 1 in 30, or greater than the total dead-born in London. There must, then, be causes in operation in Dublin which do not act in the practice of the Royal Maternity Charity. Another fact that deserves attention is, that there appears to be a relation between the proportion of dead-born children, and the proportion of obstetric operations and maternal mortality. This latter also is far higher in Dublin than in London.

The conclusion indicated by the foregoing reflections, and others that will suggest themselves is, that *an effective scheme of registration must embrace every delivery*. In the case of the fruit being still-born, it is desirable to specify, as well as can be done, the ascertained or probable cause of death. The only approach to a collection of reliable evidence upon this head with which I am acquainted was commenced by Dr. Collins, and continued under Dr. Shekleton, at the Dublin Lying-in Hospital. I have no hesitation in declaring my conviction that the extension of registration to still-births is imperatively required as a means of protection for infant and even maternal life. Of its importance as an element in the construction of medical statistical comparisons, every one accustomed to similar researches may judge. An objection, not without weight, lies in the difficulty of drawing a line between abortion and birth at a period when the fruit is viable. But I cannot now discuss objections or difficulties.

Returning to obstetrics proper, I refer to Table II., in which the proportions of various operations in the Dublin

Hospital and in the Royal Maternity Charity are stated. During the seven years from 1847 to 1854 in Dublin, craniotomy was performed once in every 106 labours; in London, once in 600 labours; the forceps was used in Dublin once in 269 cases; in London, once in 400; and turning was performed in Dublin once in 208 cases; in London, once in 345. Some reflections, bearing upon these differences, are contained in the observations that follow upon the next Table.

The Table illustrating the rate of mortality in child-birth, distinguishing deaths from puerperal fever, must be read with some reservation. Inquiries made with reference to this report increase the distrust which a peculiar experience had already raised in my mind as to the trust-worthiness of the public statistical returns. In London, owing to the vastness of the community of which the medical practitioner forms an item, instances of individual mishap in practice reflect less severely upon him than they are apt to do in more limited circles. The mortality returns of London are, moreover, subjected weekly to the scrutiny of the medical officers of health. Coroners' inquests are also freely held in cases of death, the cause of which is not satisfactorily attested. The Registrar-General publishes weekly a summary of the London mortality returns, which is scanned with interest by many persons. These circumstances concur to invest the London mortality returns with an authority which I fear is not merited generally. The fallacy of large generalizations, unchecked by individual experience, may be seen from the following example:—It is stated in the Registrar-General's Report for 1856, that the mortality in child-birth in England and Wales, in 1847, was 1 in 167, and that it had fallen to 1 in 227 in 1856. Now, having applied to Dr. Elkington for the puerperal statistics of Birmingham, I learn that the Registrar of that town says that "no one ever specifies the deaths in child-bed or from puerperal fever." May it not be that in 1847 there was less repugnance in giving correct certificates than in 1856? Certain it is, that here, as in every other medical inquiry, we must fall back upon individual observation.

MORTALITY IN CHILD-BIRTH.

The facts tabulated cannot fail to provoke the important inquiry as to the relative advantages of hospital and home obstetric institutions. When we observe that in hospital practice 1 woman in 92 dies in child-bed in Edinburgh, 1 in 84 in Dublin, whilst in the Royal Maternity Charity the deaths were only 1 in 345, the causes of this difference must appear deserving of investigation. I at once discard all idea of difference of

skill. The indications for operations are much the same in London and Dublin; at least they are so for me. The following causes appear to be the most efficient:—

1. Puerperal fever is undoubtedly more destructive wherever lying-in women are congregated. By congregation, the fomites given off acquire concentration, and probably tend to that specific fermentation which produces the poison so fatal when absorbed into the circulation. In addition to the greater risk of aërial infection, there is the increased danger in hospitals of conveying poison by touch, and by articles of clothing. The state of insulation of every puerpera in her own dwelling guards her from the most active sources of infection. The difference in London is striking. Whilst the 2418 home-patients gave only 7 deaths from all causes, no less than 11 women died in the hospitals, most of them probably from fever, although the total deliveries were far less in number.

2. The late period of the labour, and comparatively helpless condition of the patients when brought into hospital, contributes largely to the mortality. In home practice, we have the advantage of watching the patient from the commencement of labour; her condition is not imperilled by being transported at a critical period to a distance. The records of the Dublin Hospital show that many women are brought in moribund, and many others too late for the application of the most effective means of treatment.

3. The deserved reputation of the Dublin Lying-in Hospital attracts many of the most formidable obstetric cases, so that the practice of such an institution includes a higher proportion of dangerous cases than would occur in the general population. I must observe, that to a certain extent the Royal Maternity Charity is entitled to the like consideration. The knowledge that the physician will be called in, in the event of difficulty, induces women who have previously had bad labours to apply for tickets. This circumstance, then, I do not think will account for the far greater proportion of operation cases in the Dublin Hospital. Thus, during Dr. Shekleton's seven years' mastership, 1 woman in 42 was delivered by forceps or craniotomy, whilst, in my public practice, only 1 women in 420 was thus delivered. This excess of 10 to 1 must have other causes concurring. Is it that distortion is more common in Ireland? This and other questions suggested increase the regret that a system of registration, like that in operation in England, is not yet established in Ireland. We cannot know how far the experience of the Dublin Hospital is exceptional or typical of the parturient history of Ireland, until we have a general statistical return.

4. I may be excused for adverting to a doubt which has been often expressed to me, whether the records of the Royal Maternity Charity are so accurately kept as to deserve reliance. I believe the system followed is well calculated to insure completeness. Every month each midwife presents her case-book to the secretary; in this, entry is made of the name, residence, date of delivery, nature of presentation, fate of mother and child of every case attended by her, and also of every case in which the assistance of the physician has been called in. She is bound to visit every patient at least three times after delivery, and to enter the dates of her visits. In my Division, the midwives' reports are checked by my own case-book, and by returns made to me by my assistants. It must further be remembered, that any midwife neglecting to call assistance in a serious case runs the imminent—almost certain—risk of a coroner's inquest; and that the Registration system would surely bring to light any case of puerperal death. As far as they go, I believe no serious errors exist in the statistics I have given. It should be mentioned, that the Royal Maternity Charity gives relief to married women only.

The experience of the Dublin Lying-in Hospital, where it is certain that every important circumstance is faithfully recorded, is therefore entitled to a degree of confidence to which no public vital statistics can lay claim.

These reflections again lead me to the conclusion that no thoroughly reliable public vital statistics will ever be collected until it becomes imperative upon every person assisting at a birth, whether the fruit be living or dead, to see that the birth is registered.

I am not competent to determine how far the system of home delivery is capable of being extended in Dublin. It is possible that any curtailment of the hospital succour would be attended by an increase of suffering greater than that which might be abrogated by succour at the homes of the poor. But it is impossible to read the histories of many of the cases brought to hospital, and not to perceive that lives have been frequently imperilled and lost, because the labours were not concluded where they had begun. In England, I believe, the extension of hospital obstetric practice is on every ground to be deprecated. Independently of the great mortality of lying-in hospitals, there are motives of the highest moral, social, and even national importance, that should induce us to resolutely withstand any approach to the system in operation in Continental cities.

Leaving these general reflections and comparisons, I will now relate the clinical history of the Royal Maternity Charity.

The various orders of cases are ranged under heads, and brief remarks are appended. In this place it will be convenient to enumerate the fatal cases. One woman (No. 37) died of phthisis; she was in the last stage at the period of labour. 3 died of puerperal fever. 1 died of pneumonia. 1, whose case is not related here, is returned as having died of "exhaustion, foot-presentation;" this case occurred before I had entered upon the duties of the office. 1 death took place from convulsions, before assistance could be obtained. Not a single death took place in consequence of any operation.

The cases of placenta prævia, being embodied in a special communication read before the Obstetrical Society of London, are not reproduced.

CASES OF CRANIOTOMY.

Distorted and Contracted Pelvis; Craniotomy.—No. 11. November 10, 1857.—Second labour; delivered of her first child by craniotomy. She was taken in labour on the 9th, at 3 P. M. The membranes ruptured the same night; feeble pains continued all day. I saw her at 10 P. M. on the 10th; pains, hardly any; pelvis so contracted at outlet that two fingers were introduced with difficulty; arch of pubes also contracted; sacrum projected, and pubes so pressed back as to reduce antero-posterior diameter to three inches. She has a strong spinal curvature, and, when standing, one side of the pelvis is lower than the other. The pelvis is twisted laterally, and the cavity shortened. Head in first position, but lying on the pubes; full size, bones hard. Perforated. I was obliged to break up the head, bringing away the bones piecemeal by crotchet and craniotomy forceps before the base could be brought into the pelvis. After considerable labour, the child was extracted. A copious gush of hemorrhage followed the placenta. She recovered quickly and perfectly.

Contracted Pelvis; Craniotomy.—No. 24. February 2, 1858. Pluripara; always lingering labours; last child still-born. At full term; seen by Mr. Edmunds, one of my assistants, at 10 P. M. on 1st; head at brim; already in labour some hours, without progress. I saw her at 3 A. M.; the pains had remitted. Patient weak and restless; pulse small. Sacral promontory easily reached by finger; antero-posterior diameter scarcely exceeding three inches; cranial bones overlapping, and skull somewhat flattened between promontory and pubes, but still movable, as the full diameter of the head is too large to enter. Some contractile nisus having returned, I waited an hour; but this being ineffectual, and symptoms of exhaustion increasing, I lessened the head, and delivered by crotchet. The moment

the head was lessened, contraction returned strongly. Recovered favourably.

February 15, 1859. Again in labour at full time; head and foot presenting. The contraction of antero-posterior diameter forbidding application of forceps, I determined to try extraction by turning, before lessening the head. This was done under chloroform. The head was jammed for twenty minutes between the promontory and pubes before it could be dragged through. Great force was used; the head slipped into pelvis with a sudden jerk. Child born asphyxiated, but in a few minutes recovered. Mother and child both did well.

Contracted and Distorted Pelvis; Craniotomy.—No. 29. February 12, 1858.—Primipara, aged 20. I saw her at 3·15 A. M. The membranes had broken on the previous day. She had strong pains, but no advance for some hours; pains now flagging. Has been lame in right leg from birth. Pelvis narrow in pubic arch; promontory somewhat projecting; brim slightly oblique, ovate. Head in first position, movable; but pains do not drive it into brim. Some febrile movement and mental excitement. Lessened the head; the bones broke up so easily that it was difficult to get a hold with the crotchet. Pains returned, and head extracted in 90 minutes. Recovered well.

February 9, 1859. She was again in labour at full time, having disregarded injunction as to induction of premature delivery. Violent pains, of several hours' duration, ineffectual. Patient highly excited, delirious. Gave chloroform, and delivered by forceps, using strong *compression* with contraction. In half an hour brought head through; it bore deep impressions of fenestræ. It was a male, and small, and lived. The mother had mania, but recovered in St. Luke's Hospital.

Contracted Pelvis; Hydrocephalus; Craniotomy.—No. 70. September 2, 1858.—Second labour; first child still-born. In labour since yesterday. At first, midwife "could feel no presentation." Membranes broke last night; pains strong all through. Great nervous excitement; face flushed; pulse quick; skin hot. Head in first position; felt as a broad expanse lying like a globe on a brim too large to enter; sutures widely open; pelvis somewhat contracted. Forceps could not be applied. Perforated; a free gush of water and cerebral matter followed. Extracted by crotchet and Dr. Oldham's vertebral hook, with some difficulty, in an hour. Child large. Patient did well.

Notwithstanding the favourable result to mother and child in Nos. 29 and 24, of substituting turning and the forceps for craniotomy in contracted pelvis, I am far from wishing to submit these cases as examples for general imitation. They concur

with the experience of others in proving that there are certain cases, where the disproportion is not great, in which the alternative is open to us. To determine which method is the more judicious in any particular case must be always left to the judgment of the practitioner, who alone is in a position to estimate fairly all the circumstances.

Contracted Pelvis; Induction of Premature Labour.—No. 63. July 27, 1858.—Has had four labours; first, craniotomy; second, "instrumental," child still-born; third and fourth, induced at seven months and a half by douche; one of the children now alive. Pelvis very contracted, with narrowing of pubic arch. Labour induced in thirty-fourth week, by repeated injections of tepid water against the os. Child alive. Recovered well.

CASES OF TURNING.

Arm and Funis Presentation (Placenta Prævia); Turning.—No. 18. December 16, 1857.—Labour at eighth month. Foot lay near os, so that it was seized without passing hand through. The passage of the body was very tedious, owing to rigidity of the os. Child still-born. Mother did well.

Arm and Funis Presentation; Turning.—No. 20. December 23, 1857.—A strong, muscular woman, in third labour, full time; in second labour a breech presentation. Waters escaped at 10 P. M. on 22nd; pains remitted for some hours, when I saw her at 4·30 P. M. on the 23rd. The left fore-arm then protruded from vagina, palm directed to right thigh; also a large bunch of funis in vagina lying in front of arm; os fully expanded; uterus firmly contracted on body of child; the head lay over pubes, a little to left; the shoulder was jammed into the brim. Gave chloroform. The first inhalations caused nausea and strong expulsive pains. When breathing became sonorous, I passed my left hand into the uterus, but this excited stronger contractions than the same manipulation before chloroform. The inhalation being kept up, the excitability of the uterus was lessened. The furthest knee was brought down, and evolution effected. The pains returned, so that traction was no longer necessary. The child (male, and of large size) was expelled in twenty minutes from commencement of operation. It was born slightly livid; heart beating feebly; respiration inexcitable; Marshall Hall's method ineffectual. The placenta was very large; the cord was inserted an inch and a half from the margin; the rent in membranes was three inches from same margin. The patient recovered favourably.

This case is an illustration of the position of Levret, that a

low implantation of the placenta near the cervix is a cause of transverse presentation.

Arm Presentation; Turning.—No. 23. January 18, 1858.—Pluripara, full time. Membranes broke at noon yesterday. I saw her at 7·30 P. M. on the 18th. Arm had been down twenty-four hours; pains had remitted some hours. Woman robust, not much prostrated. I found the right hand presenting, thumb to pubes. The shoulder was jammed into the brim; uterus compressing body tightly, all liquor amnii having drained away; child still alive. I did not give chloroform. Passed my left hand into uterus with some difficulty, but no excessive contraction was excited by the operation. The uterus was so tonically contracted round the body that I found it impossible, without using excessive force, to reach the farthest knee; the nearest one was accordingly brought down. When the breech was at the brim, pains returned, and effected expulsion. The cord became compressed, and the child—a large one—was still-born. The rent in the membranes was nearly central. Patient recovered well.

Arm Presentation; Turning.—No. 25. February 2, 1858.—Pluripara; once before delivered by turning. I saw her at 1 P. M. The hand had been down since 11 P. M. of 1st; the membranes had ruptured at noon; pains had remitted some hours. Patient anemic, weak. The left hand was presenting, thumb to pubes. Omitting chloroform, I passed my left hand. The shoulder was very low, and head lay over pubes; uterus compressing child into a ball. The passage of the hand was difficult, but it excited no contraction. The farthest knee could not be reached without undue violence; the nearest was brought down. Contraction returned when evolution was effected, but was strengthened much by occasional doses of brandy. Expulsion was effected mainly by uterus, aided by pressure externally. Pulsation in cord ceased when breech was engaged in brim. Child still-born. Considerable hemorrhage followed, and a clot weighing about 2 lbs. was expelled. The rent in the membranes was two inches from the edge, and the cord was inserted close to same edge. The woman was much exhausted by the labour, but recovered favourably. This case is also in illustration of Levret's proposition.

Twins; Pendulous Uterus; Turning.—No. 57. July 21, 1858.—Pluripara. Membranes broke at 8 P. M.; labour very lingering, though the pains were good; breech presenting. The uterus was of enormous size, and hanging over the pubes. Owing to this mal-direction, to distention, and to the loss of power from transmission through double sac of liquor amnii, contractions were ineffectual. I delivered presenting child by

hooking down one leg; male, living. Second child presented by head, forehead to pubes. I ruptured membranes; pains strong, but no expulsive effect; head too high up and lying too forward over pubes to admit of convenient application of forceps. Introduced left hand to turn; found knee in anterior aspect in front of pubes. Brought it down; but though traction was exerted directly in posterior direction, the head, being hitched in front of pubes, would not turn. I therefore passed hand in again, and, seizing head, pushed it up, whilst traction was kept up on leg, and abdomen supported externally. Evolution now took place, and labour was easily accomplished. The second child was still-born; both were of average size. Placentæ adhered to fundus, very large, and slightly united;

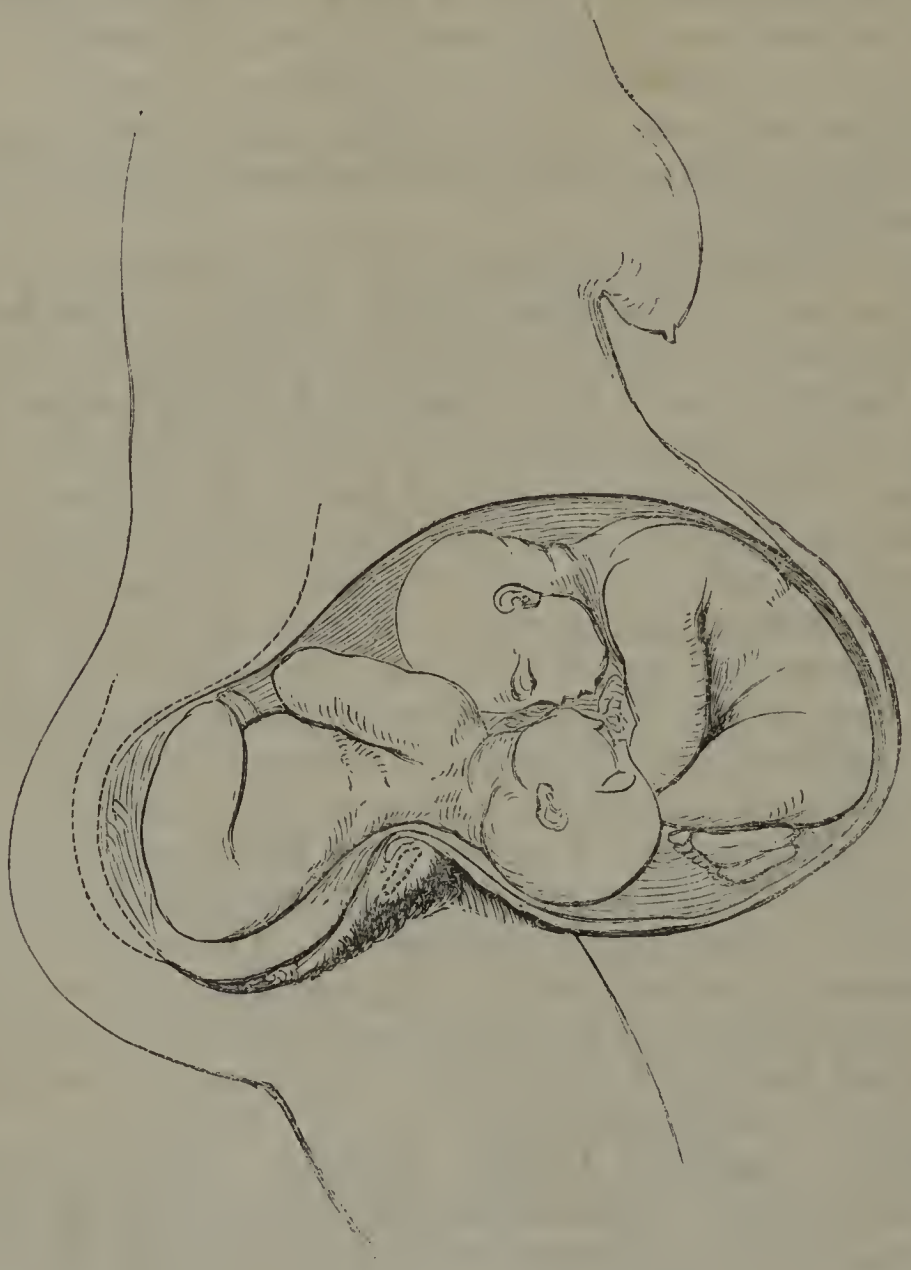


Fig. 1.

were extracted. Fig. 1 illustrates the retort-form of uterus, and position of the children, in this case.

The midwife not inaptly compared the operation of delivering the second child to "lifting it over a wall," so completely did it lie in a bag in front of the pubes.

In addition to the above, Mr. Greenwood performed version in one case on account of arm presentation. Child still-born; mother did well.

Turning for Placenta Prævia.—No. 35. April 12, 1858.—The child, a seven months', was born alive, and survived. Mother did well.

Turning for Placenta Prævia.—No. 59. June 10, 1858.—The child, a seven months', was born alive, and survived. Mother did well.

See also No. 45, under "Puerperal Fever."

It will be observed that the only death consequent on turning was No. 45, in whom the operation was performed for placenta prævia. Puerperal fever ensued, and death followed eight days after delivery. It is possible that in this case contagion was concerned, since the midwife had other cases of fever about the time.

But I think it important to advert to a fact I have dwelt upon elsewhere, namely, that patients with placenta prævia are more liable than others to have uterine inflammation and pyemia, on account of the great vascular development of the structures through which the child has to be extruded. This danger is infinitely increased when the hand is forced through the os uteri, and the child withdrawn. The greater amount of compression and contusion of the cervix, of course, adds to the risk of inflammation and absorption of putrilage. It should also be borne in mind that the os and the cervix, thus exposing a rough "amputated" surface, from which the placenta has been detached, and thus bruised and inflamed, are in free contact with the external air, in the most favourable condition for suppuration and putrefaction of discharges. Under ordinary circumstances the part of the uterus to which the placenta had grown is protected from these influences. Gendrin has pointedly adverted to this source of danger. Dr. Radford has, I believe, shown that puerperal fever is more frequent after turning; and I find, that out of the 24 cases of placenta prævia narrated by Drs. Sinclair and Johnston, 2 certainly, and probably 3, died of phlebitis. To this I have to add another case which occurred to myself in April last. The patient died of inflammation of the uterus eight days after delivery by turning.

These facts must weigh in our estimate of the methods of treating placenta prævia. Any method which either averts

the necessity for turning, or allows us to wait until the structures are so dilated as to render the operation less violent, deserves increased consideration on this account.

It will, perhaps, be noticed that chloroform was given in only one case of turning. In that case, as in others within my experience, it did not facilitate the operation. It not uncommonly happens that the excito-motory function is so heightened by anæsthesia that the presence of the hand causes violent contractions of the uterus. By pushing the anæsthesia further, this may, it is true, be overcome; but without skilled assistance to administer the chloroform, this cannot be safely done. I find in Drs. Sinclair and Johnston's book a similar case, where chloroform obstructed version. I am satisfied that I can in most cases pass the hand into the uterus, and perform any necessary operation there, with less irritation and more facility, without inducing anæsthesia.

CASES OF FORCEPS DELIVERY.

Lingering Labour; Forceps; Paralysis of Leg.—No. 66. August 6, 1858.—Tenth pregnancy; in labour twenty hours; head partly in pelvis, in left oblique diameter, but no progress, notwithstanding pains. Applied forceps; a little traction brought head fairly into pelvis, and then pains expelled it. Child lived. On the 10th, the mother suffered from paralysis of the left leg, with great pain in the hip-joint. She had complained much of cramp, and pain in left pelvis during birth of head. There had, no doubt, been excessive pressure on left sacral plexus. These symptoms persisted for some weeks.

Contracted Pelvis; Convulsions; Forceps.—No. 67. August 6, 1858.—Primipara, aged 35; many hours in labour; point of cone in pelvis; very large caput succedaneum; sutures overlapping; scanty room for finger in any part of circumference except under right acetabulum and left sacro-iliac synchondrosis; head in right oblique diameter. Pains strong, suffering acute, face flushed, eyes injected. Contrary to advice of a more discreet colleague, the midwife in attendance had given ergot, instead of sending to me earlier. Although it seemed doubtful whether the head would pass without lessening it, I tried forceps; with these, using considerable extracting force, I delivered in an hour. Before delivery a convulsive fit, with stertor and insensibility, occurred, which seemed to be excited by uterine contraction and pain. Child still-born; mother did well. I regretted that I could not administer chloroform, which, from experience in

like cases, I have found efficacious in averting convulsions and facilitating labour.

Face to Pubes; Forceps; Adhesion of Placenta; Calcareous Degeneration.—No. 47. May 27, 1858.—A strong woman, in labour with twelfth child. Labour lingering, but still pains; face to pubes. In order to shorten labour, delivered immediately by forceps. Child alive.

Being summoned elsewhere, removal of placenta was left to midwife, but I was called back in two hours on account of retention of placenta and flooding. There was irregular saccular contraction; the greater part of placenta had to be peeled off by fingers. This removed, hemorrhage ceased. The uterine surface of the placenta presented patches of calcareous degeneration. Smart bronchitis, peritonitis, and fever followed. She recovered favourably.

Powerless Labour; Forceps.—No. 69. August 24, 1858.—Eighth pregnancy; in labour since yesterday. Midwife ruptured membranes at 4 A. M. on 24th; no pains "to speak of" at 9·30 A. M., when I found head in left oblique diameter, at brim; os fully dilated. Applied forceps; gentle traction was followed by uterine contraction, and labour was completed in twenty minutes. Child male, large, livid, but breathed freely soon. Hemorrhage, restrained by pressure, followed. Recovered well.

Difficult Labour; Forceps.—No. 60. July 23, 1858.—Primipara; head said to have been three hours at brim; strong pains, but no progress; slight disproportion. Applied forceps; exerted considerable tractile force, aiding pains, during more than half an hour, when head, elongated and cylindriform, was extracted. Child still-born. Mother recovered well.

Pendulous Belly; Protracted Labour; Forceps.—No. 65. August 2, 1858.—Third pregnancy; membranes broke two days before; head has presented several hours, with strong pains, but no progress. Belly very pendulous, so that child lies in a curve over the pubes; head nearly wholly in cavity. Pains quite inefficacious, from false direction of expelling force, which is wasted against the pubes. Applied forceps; as soon as head was moved, a considerable quantity of liquor amnii escaped, which had been ponded up in the sacculated uterus in front of pubes. Gentle traction, with upward pressure on abdomen externally, soon completed delivery. Child still-born; no pulsation in cord; respiration inexcitable; Marshall Hall's method tried for ten minutes without effect.

Fig. 2 exhibits the retort-disposition of the uterus in this case.

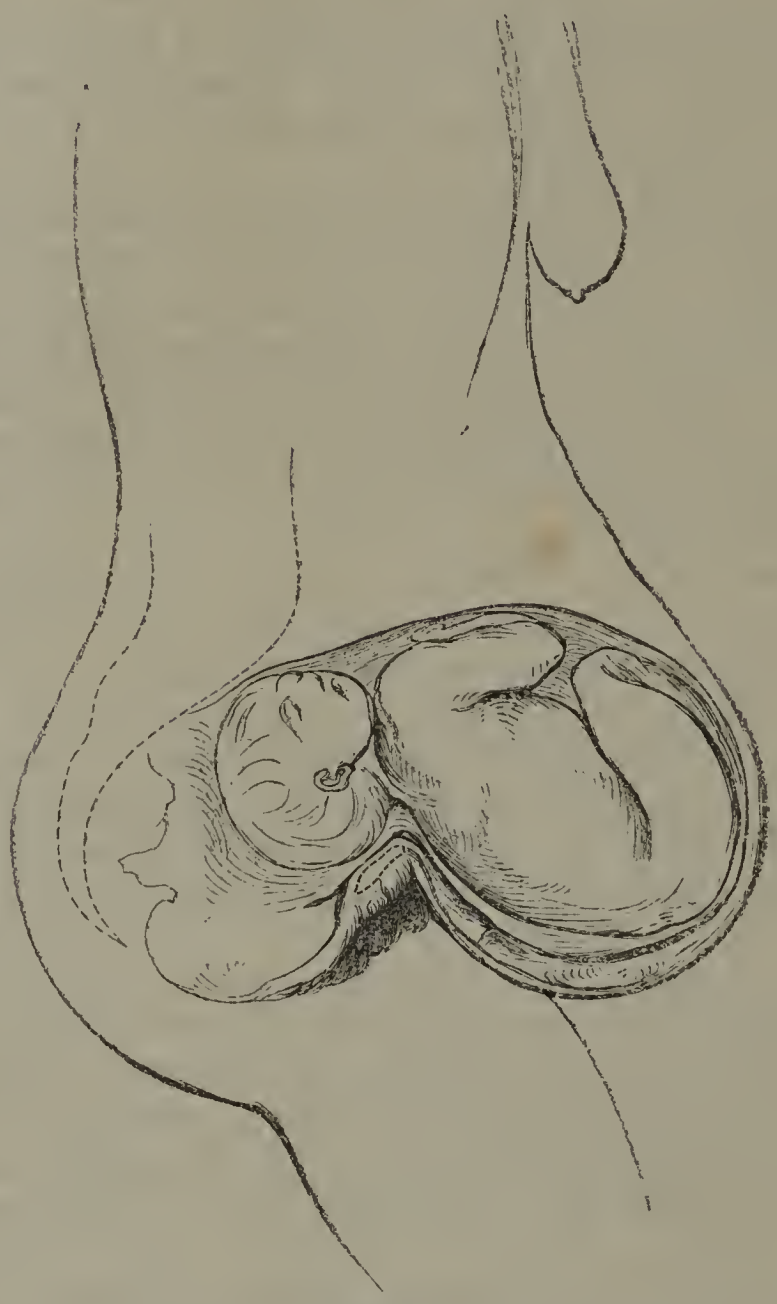


Fig. 2.

The forceps employed in the foregoing cases is the instrument in use at the Dublin Lying-in Hospital.

CASES OF PUERPERAL FEVER.

Puerperal Fever ; Phlegmasia dolens.—No. 30. February 28, 1858. Pluripara; delivered 16th inst.—Complained of violent pains "all over her," and shortness of breath on the 27th. Great fever; depression; left leg somewhat swollen; acute pain on attempting to move it, and on pressure in groin (she had complained of pain in left iliac region and leg before delivery). Ordered bark, ammonia, and chloric ether. On March

7th the left leg was better, but the right leg was affected. 12th. Both legs free, fever subsided, but prostration. She ultimately did well. It was a very unpromising case at first. She had been going on favourably till the 26th, when she had a fright from seeing a child swallow a pin. She had white swelling of the left leg in a previous labour.

Fever.—No. 36. April 16, 1858.—A pluripara; had considerable fever. Habitat, a close, unhealthy court; room ill-ventilated; infected with privy stench. Recovered.

Fever.—No. 38. May 10, 1858.—A Jewess; primipara; had considerable fever after labour, with abdominal pain. Recovered under bark and salines.

Puerperal Fever.—No. 12. November 14, 1857.—Natural labour; living child. Had shivering and vomiting same day, and again at night and following day. I saw her on the 16th. Pulse 124; tongue brown, but moist; abdomen painful on pressure; tympanitis. No lochial discharge or milk. She had gray powder and Dover's powder, of each five grains every four hours, and a mixture of liquor cinchonæ and ammonia, and mustard poultices. On the 17th she was better. There was a scanty secretion of milk and lochial discharge. On the 22nd, having apparently fairly recovered, she was seized with dysentery, acute pain in the descending colon, fever, and prostration. She took infusion of cusparia, nitric acid, and tincture of opium with great relief, and recovered.

Puerperal Fever; Death.—No. 27. February 7, 1858.—A Dutch Jewess; pluripara; delivered three days. When I saw her, there was fever, prostration, rapid, small pulse, respiration hurried, tongue brown at back, red at edge; countenance anxious; no abdominal pains, even on pressure; had passed "thirteen or fourteen" stools in twenty-four hours; no milk; lochia not suppressed. Ordered cusparia, nitric acid, and laudanum; and Dover's powder with gray powder at night. (Habitat, a small, crowded room, without back window.) On the next day diarrhœa had stopped, but she was not better: bark, ammonia, chloric ether, beef-tea, wine. 9th. Great pain, redness, and swelling of left elbow and fore-arm. 10th. Same condition of right leg. 11th. Vesications on right leg. 12th. Both arms and legs affected, and a gangrenous sore on sacrum, on which she had rested. 13th. Died.

Inflammation of Uterus and Peritoneum.—No. 13. December 5, 1857.—A pluripara, delivered naturally of a living child. Nineteen days after labour she was seized with acute pain in left iliac region, which spread over abdomen, and there was considerable febrile movement. She was quickly relieved by

salines, Dover's powder, and mustard poultices. On the 9th she was convalescent. Recovered.

Inflammation of Uterus and Peritoneum.—No. 14. December 4, 1857.—Delivered of seventh child five days ago. Third day she had shivering; fourth, arrest of lochia and milk; partial suppression of urine; constipation; acute fever; pulse 110; tongue white; acute pain in left iliac region, and pain on pressure all over the abdomen, which is tympanitic; also slight bronchitis. Under salines, Dover's powder, and mustard poultices, she was relieved, and recovered.

Placenta Prævia; Turning; Puerperal Fever; Death.—No. 45. May 21, 1858.—A pluripara, delivered on the 19th by Mr. Edmunds, by turning, on account of placenta prævia. Next day, fever, tympanitis, and prostration. (Habitat, not confined, well aërated.) 21st. Tenderness in left iliac fossa. 22nd, 23rd, 24th. Diarrhœa; irregular, intermitting pulse; pain increased. She sank on the 27th.

Puerperal Fever.—No. 51. June 13, 1858.—Delivered naturally of a living child on the 12th. Next day, delirium, fever, acute pain in belly. 13th. Delirium and pain worse; improved till the 16th, when pain returned, with retching and diarrhœa. Took cusparia, nitric acid, and laudanum. On the 20th, convalescent. (Habitat, a close, small room, intensely hot.)

Puerperal Peritonitis; Death.—No. 55. July 18, 1858.—Delivered six days; in great misery; lochia and milk scanty; diarrhœa; great pain in abdomen; for two days seemed better. 23rd. Symptoms aggravated. 24th. More prostrated; syncopal seizures; vomited "matter like a motion;" tympanitis. She sank on the 27th. The midwife who attended this woman had two other fatal cases of puerperal fever in her private practice about the same time. I advised her to intermit her practice for a while. When she returned to duty no fresh case occurred.

Puerperal Fever; Diarrhœa.—No. 16. December 9, 1857.—Pluripara; delivered 8th. Seized next day with violent pains in back; acute pain in abdomen, and especially in right iliac region on pressure; fever; pulse 110; tongue dry; milk and lochia scanty; frequent watery stools. Had calomel, one grain, and Dover's powder, five grains, every four hours. On the 10th diarrhœa and pain had abated. Ordered infusion of cusparia, nitric acid, and laudanum. On the 12th, still improving, but diarrhœal tendency remains. On the 16th, convalescent. Recovered.

Puerperal Fever.—No. 28. February 13, 1858.—A pluri-

para. Taken with considerable febrile movement, with nervous excitement, three days after delivery. (Habitat, a small, close room, without back opening, and air rendered more stifling by shutting in the bed with curtains.) She was ill for some days, but recovered.

Peritonitis; Diarrhœa.—No. 58. July 23, 1858.—Pluripara; delivered of twins, both living, on 15th; rapid labour; no hemorrhage. Taken on following day with abdominal pain and diarrhœa. This still continued on 23rd. Ordered, liquor of acetate of ammonia, with five grains of Dover's powder, every four hours. 24th. Better. Recovered favourably. This patient was attended by same midwife as No. 55.

In addition to the above, a woman was seized in September, 1858, with peritonitis, five or six days after labour, from going about too soon. She was found in great wretchedness, was badly nursed, and died on the 16th. This case was attended in my absence by Mr. Lane.

In this history I omit several cases of minor severity, the particulars of which present no sufficient interest to justify relation.

The following cases do not require classification:—

Protracted Labour; child weighing twelve pounds.—No. 56. July 20, 1858.—A robust Irishwoman, who had three difficult labours. In labour twenty-eight hours; progress very slow; head expelled naturally; uterus was powerless to expel shoulders; child still-born. Placenta did not correspond in size with the child. Patient had some fever, and vomiting next day, but recovered well.

Retained Placenta; Partial Calcareous Degeneration; Irregular Contraction.—No. 43. May 14, 1858.—Pluripara; feeble; ill-nourished; delivered by midwife; funis and hand presentation; placenta retained, with considerable hemorrhage. The placenta was shut in by rigid contraction at the os internum. This was overcome by steady pressure. Placenta removed; hemorrhage ceased. The uterine surface showed generally spots of calcareous degeneration, but there had been no adhesion.

My assistants return several cases of retained or "adherent" placenta. I record this case for the purpose of suggesting that a particular inspection of the placenta should be made in all cases of retained and adherent placenta. In some cases I have found evidences of inflammation of the decidual portion of the placenta. A frequent condition is calcareous degeneration of the decidual surface. This is exemplified in No. 47, under "Forceps Deliveries." The exact seat of attachment of the

placenta should also be noted. I have observed that a low implantation, where the placenta encroaches upon the lower or cervical zone of the uterus, disposes to adhesion and retention.

Convulsions; Death before Delivery; Twins.—No. 26. February 7, 1858.—A German Jewess, primipara ; about eight months and a half gone. Seen by a midwife at 1·30 A. M., when waters broke; head presented ; pains very feeble ; no progress; convulsions appearing ; at 8·30 A.M., she sent for me; messenger failed to find my house, and called in a German physician, who saw patient about 9, and ordered laudanum draughts. Convulsions and exhaustion, however, increased ; Mr. Blackman and myself arriving soon after 10, found her dead. The head was entering pelvis, very movable. I laid open the uterus ; the placenta was spread all over the anterior aspect of the uterus, stretching to fundus, and round to right side. The fœtus which presented being removed, I found another in an unbroken amnion; both girls; the placenta was single. This removed, I inverted the uterus for thorough examination ; no laceration ; pelvis not contracted. I learned that this poor woman had been much prostrated by misery and want of food. This had probably induced a degree of uterine inertia; but another circumstance contributed to retard delivery; the discharge of the amniotic fluid of one sac, and retention of the fluid of the other sac broke the contractile power, and frustrated the effort of nature to expel the first child. The feeble contraction could impart no expulsive action on the presenting child, because the force had to be transmitted through the fluid medium of the unbroken sac. It was left to regret that forced delivery had not been performed at 9 o'clock, or earlier.

Puerperal Mania.—No. 7. October 27, 1857.—A pluripara, delivered normally. Mania appeared on the third day ; she got out of bed and went into the street, thinking " her husband wanted to do away with her ;" she was still suckling her child ; she was removed to an asylum.

Puerperal Mania.—No. 32. March 11, 1858.—Pluripara, became delirious without violence some days after ordinary labour. There was excessive debility, anemia, and rapid weak pulse ; sleeplessness ; some milk ; under sedatives, and generous diet, she recovered in about a fortnight, without its being necessary to remove her to an asylum.

Tubercular Pneumonia and Polypus.—No. 6. November 3, 1857.—This patient was suffering from phthisis at time of labour ; pneumonia appeared soon after. The pneumonic complication having been subdued, I had her removed to the Metropolitan Free Hospital, under the following circum-

stances:—She has had three living children; but her last five pregnancies all ended prematurely; the present one earlier than the rest, namely, at fifth month. After labour, a solid substance protruded externally; "it seemed to have a sort of opening at end, out of which blood came." Seen by a midwife and a surgeon; she was assured it was of no consequence. I saw her on the third day; the os uteri was low; the anterior lip jagged, the posterior smoother; the os admitted two fingers, which, penetrating half an inch, touched a solid, fibrous-feeling, rounded body; dragging it gently by aid of forceps caused pain. In the hospital she was kept under observation as to polypus, care being bestowed to improve her health. The polypus was felt daily, till one day, after a very minute examination, carrying the finger close around the base, which was broad and rising from the cervix, the tumour came away some hours afterwards. The next day the os, which had previously been patulous, was now closed; she then did better; all flooding and discharge ceased. She died, some months later, of phthisis.

Exhaustion from Phthisis; Death.—No. 37. April 27, 1858.—This poor woman had been attended for consumption by the parochial surgeon during her pregnancy. She sank of exhaustion from this disease the day after delivery.

Case No. 6 suggests the question as to the expediency of removing polypi which make their appearance at the time of labour. The fibroid polypus, being constituted of tissues similar to the normal structures of the uterus, follows the same law of growth and development during pregnancy, and of involution after labour. It has been held, therefore, that it is injudicious to remove polypi during the puerperal state. I believe that in most cases a different principle should be followed. The fact of a polypus being in process of involution, is no sufficient reason against removing it *quàm proximè.* That involution will not, at least we have no evidence that it may, proceed beyond a certain point, and so long as a polypus remains, it is liable to cause exhausting hemorrhages at the menstrual periods, and to endanger life in a future pregnancy. It happened that in this case the polypus was removed by a very easy process, otherwise it was my intention to excise it on the next day.

Art. V.—*On some Actions performed by voluntary Muscles, which by habit become involuntary; with Practical Applications.* By Jonathan Osborne, M. D., King's Professor of Materia Medica, &c., &c.

"Illustrans commoda vitæ."—Lucretius.

The collection of habitual actions which contribute so much to form the character of each individual, and by which he is identified no less than by his features, commences in infancy, and continues to receive new accessions from education and imitation up to extreme old age. Some of these habits, which have not been thought worthy of notice by physiologists, and which do not come under any other department of science, yet furnish matter for consideration to the physician.

The habits which form the subject of my present observations may be divided into those occurring, firstly, when asleep; and secondly, when awake.

THE HABITS DURING SLEEP.

The attitude assumed during sleep is always that which admits the greatest relaxation of the muscles of voluntary motion, and the greatest freedom for the movements of those engaged in the performance of the internal functions, and especially for the movements of the heart and diaphragm. In our own case, and in that of all the animals with whose habits we are sufficiently acquainted, the horizontal posture is always adopted, and in no class is this more to be remarked than in birds, who, although prevented from lying down, and obliged to remain perched on the branches of trees, yet place the head more or less on a line horizontal with the body, and most frequently under their wings. The effect of this horizontal position of the head is to favour that increase of blood in the vessels of the brain which is required for sleep[a].

During infancy the child usually sleeps in whatever posture he may be placed, but among adults the case is different. At a time when I was engaged in some investigations respecting the more frequent occurrence of pneumonia in the right than the left lung, I engaged some friends who were connected with public establishments to ascertain by actual observation whether the greater number slept on the right or the left side. For this purpose they went through the dormitories when the inmates were in their first sleep, and the following results were obtained:—

[a] See "Some Considerations tending to prove that the Choroid Plexus is the Organ of Sleep." By the Author. London Medical Gazette, June, 1849.

1st. In four boarding-schools of boys and girls, mostly under fourteen years of age, the numbers were nearly equal, viz., on the left side, 260 ; on the right side, 248 ; and on the back, 234.

2nd. In two establishments containing young persons of both sexes, but above the age of childhood, the numbers were—On the left side, 23 ; on the right side, 58 ; on the back, 29.

3rd. Of the soldiers at that time quartered at the Pigeon-House, and inspected by orderlies during three successive nights, the returns were—on the left, 22 ; on the right, 44 ; on the back, 62. It is to be observed that these last returns were made during the hottest summer weather, when all are most disposed to lie on the back.

From the above observations it appears that in childhood the tendencies to sleep on the left or right side or on the back are nearly equal; but that, as age advances, those who sleep on the left are only the half of those sleeping on the right. Now, let us compare this with the most authentic and extensive reports on the comparative frequency of pneumonia in the left and right lung. In Pelletan's Report of 75 cases, the frequency of the disease in the left lung, compared with it in the right, was as 1 to $2\frac{1}{2}$; and in Andral's collection of cases there were 58 in the left, and 121 in the right lung : that is, rather less than as 1 to 2. This conformity between the frequency of pneumonia and that of persons lying on the right lung can hardly be accidental ; and taking it in connexion with the fact that the cases of pneumonia which came under my care occurred in the lung on which the patient was accustomed to sleep, as far as it could be ascertained, I consider that I have been fully justified in advancing the opinion held by me for several years, that the greater frequency of pneumonia in the right lung is caused by the prevalence of the habit of lying on the right side during sleep ; which is also conformable with the greater tendency of the base of the lung to the same disease resulting from our upright posture.

The reason for the preference of lying on the right side appears to be, that the weight of the liver is thereby kept from pressing on the abdominal viscera, while the same position is also most favourable to the freedom of the heart's action. The same preference appears to exist among quadrupeds in general, and on the same account.

In disease the posture during sleep is altered in order to accommodate to the circumstances of the part affected. Thus, as is well known, in pleurisy the patient diminishes pain by

not lying on the affected side at the commencement; but when effusion has taken place, then he lies on the affected side, and is compelled to do so, unless in some exceptional cases, in which the effusion is held in separate chambers by adhesions, and thus prevented from pressing on the heart or root of the lungs. In all affections of the head great aggravation is experienced from lying on the back; and persons suffering from ordinary headache connected with congestion, find relief from placing the head forwards. In this posture, while the arterial flow is discouraged, the return of the blood through the sinus and veins is promoted. It is a subject of general experience that nightmare comes on almost exclusively when the patient is lying on his back, and that it immediately ceases as soon as he turns forward. In this case, in addition to the causes now mentioned, there is usually the pressure of a distended stomach on the descending aorta, and a consequent increase of blood propelled through the ascending aorta to the vessels of the brain. Those facts prove that when a patient is confined to bed, and labouring under any affection of his head, it is best to direct him to lie on either of his sides in preference to his back. I have often had occasion to observe the importance of this measure; and it may, in cases of great debility, be sometimes requisite to assist him in maintaining this position by means of pillows or other supports placed behind his back.

The bent position of the limbs in sleep is a necessary consequence of the greater power of the flexor muscles than of their antagonistic extensors; and when the mouth or eyes remain open, or only partially closed, it must be inferred that from the depth of the sleep the muscular contractions of these parts have entirely ceased, and that they are abandoned to whatever position their ligaments may impose. Another phenomenon belonging to very deep sleep is *Snoring*. This sound is not produced by stoppage of the nose, as commonly supposed, but is the effect of a temporary paralysis of the velum, which becomes passive, and is flapped backwards and forwards by the currents of air in inspiration and expiration. This sound, although so common, and so easily imitated in the process of gargling the throat, is yet, under the name of stertorous breathing, enumerated as one of the most portentous symptoms of apoplectic coma,—and justly so. In health it never occurs except in the most profound sleep, and frequently becomes so loud as to waken the sleeper, and so force him to divide his sleep into several parts; in which, perhaps, we may trace a provision of Nature, whereby she has placed an alarm-bell close to the

organ of hearing, which sounds the tocsin, and rouses up the patient whenever his sleep tends to become congestive and comatose. Many snore almost as often as they sleep, and others never, except when overpowered by great previous fatigue. Those who wish to rid themselves of the habit can only effect it by sleeping less profoundly, as is done by creating a custom of waking at a certain hour, and by rousing up with alacrity at a given signal.

Habits of rising and lying down.—If we had sufficient opportunity of observing the mode of assuming the horizontal posture, and of rising from it, in our species, perhaps a uniform mode of performing these actions would be traceable among all classes of society ; but on this subject we can only refer to the animals best known to us, and in them a remarkable uniformity of habit may be observed. Thus the horse and the ox both lie down by first kneeling ; the ox remaining longer on his knees before bringing down his hind-quarter and his body to the ground. But, in getting up, the horse invariably rises first upon his fore-legs, previously to making any effort with his hind ; while the ox, on the contrary, rises first on his hind-quarters, and often remains on his knees some few seconds, until his hind-legs are completely established in their erect position. The elephant, the rhinoceros, and the pig rise first upon their fore-legs, like the horse ; but the goat, sheep, and deer, rise like the ox. Those habits are so firmly established that they are never changed except by disease or infirmity.

HABITS WHEN AWAKE.

Habit of the Erect Posture.—The erect posture, which is so uninterruptedly maintained by us during our waking hours, suggests some very important points for consideration. During it, the intestines and abdominal viscera are held suspended *sideways* from their mesenteric and other similar attachments, for about sixteen consecutive hours out of the twenty-four every day. During this space of time the effect of gravitation must be to occasion congestion in the lower parts. Besides this, the origin of the vessels, in consequence of their lateral attachment, must be more or less compressed, like the neck of a heavily filled bag hanging against a wall. It is true, that to diminish the congestion of these pendulous viscera, we have the support of the abdominal muscles. This, however, is not applied directly, as in animals with a horizontal spine ; but only laterally, and at an angle of disadvantage. Man is the only animal who holds his vertebral column upright. Even in birds, marsupials, and

monkeys, who hold it elevated at different angles above the horizontal line during their waking hours, an absolutely vertical posture is never maintained for any length of time.

In the human subject no provision can be traced for obviating the congestion which must be more or less a necessary consequence. On the contrary, the frequency of the pendulous abdomen of advanced years, of hernia, of hemorrhoids, and the uniformity with which ulcerations of the intestines occur at the most depending part, namely, opposite to their mesenteric attachment, and the fact that those affections are always mitigated by the patient being placed in the horizontal posture, all tend to prove that in maintaining the unvarying vertical posture we are following the dictates of custom and education rather than the laws of our organization.

With respect to the spine, the effect of this vertical posture is often apparent in youth, and long before the growth of bone is completed. How frequent the curves of the spine which have come on imperceptibly at an early age, and have been allowed to progress till they become deformities! How frequent the starting of some of the upper dorsal vertebræ, on the same principle that a twig when over-bent tends to give way in the middle! And, above all, how frequent the curve of the cervical and upper dorsal vertebræ belonging to advanced age, and which has been poetically compared to a shock of corn ripe for the sickle, and bending towards its mother earth! We have no opportunities of observing the relative effects upon health and longevity of the horizontal and erect postures in our species, for the latter has become too universal to enable us to institute a comparison; but these facts, taken in connexion with the fact that such distortions are not observed in any of the various animals with horizontal spines, and, above all, the fact which appears sufficiently proved, that in our species life, even under the most favourable circumstances, is much shorter than ought to be expected, are well worthy of attentive consideration, as pointing to an agency militating against health, and in universal operation. The success attending the recumbent posture in averting commencing deformities of the spine goes far to prove that Nature in this respect has been coerced beyond her powers, and renders it highly probable that the constant upright posture, which man has thought it due to his dignity to assume over other animals, produces disorders in his system tending to shorten life.

It will follow from these considerations that the erect posture should be relieved for some time during the day. Now, there are

other considerations equally cogent, but which do not sufficiently belong to the subject before us to enter on in detail, and which prove that man has also over-estimated his powers in sleeping only once in the twenty-four hours; and it cannot be shown that any provision has been made to enable him to remain awake for so many consecutive hours every day, contrary to the practice of all other animals, and contrary to his own practice in his earlier years. Hence it follows that both sleep and rest in the horizontal posture ought to be indulged in for some time, however short, during the day. This practice will be found to be attended with most advantage in the afternoon, before dinner, so as to divide the day into two nearly equal parts, each of them to be commenced when the individual has been refreshed by sleep, followed by food.

Habits of the Countenance.—Certain muscles of the face contract under pleasing emotions, as those drawing up the angles of the mouth; while others contract under painful emotions, as those drawing the same parts downwards: and in paintings these contractions are depicted by wrinkles in the skin drawn at right angles to the muscles. Such actions, although performed by voluntary muscles, are the result of an internal impulse, and take place quite independently of any wish or intention on the part of the individual. They are as involuntary as the increased secretion of tears from the lachrymal gland: and sometimes even against the efforts of the will exercised in a contrary direction. We observe in other mammalia, as the horse and dog[a], that the same muscles are set in action under similar emotions, and that the same play of the features exists in them as in ourselves, but is restricted by the want of volume and flexibility in the parts about the mouth and eyes. Education, in our case, has interposed, and has taught us to control much of the expression of the countenance. We see that, from an early period, among those nations from which our civilization is derived, notions of dignity have been always connected with tranquillity and impassibility of the countenance, as is well illustrated by the Egyptian Memnon and the Babylonian sculptures, no less than by those of Greece and Rome. The same conception of dignity exists at the present day. A countryman grins when the wind blows cold in his face, while the person of superior station keeps his features unaltered, as if not perceiving it. By constant intercourse with those whom

[a] The author once had a dog who distinctly smiled, and showed his teeth, when pleased, or when wishing to conciliate favour.

we wish to please is acquired that slight and almost imperceptible smile belonging to refined society, and which conveys the flattering notion that we are all objects of attraction and regard to each other. This subjugation of the natural expressions of the countenance, by which it is made to assume the form most pleasing to our associates, has become so general as to have almost obliterated the marks upon which the principles of physiognomy were founded by Lavater and others. Still, on the stage poignant mental emotions are depicted by the countenance, and more especially by those gesticulations which we are impelled to use to divert attention, and thus obtain a respite from our inward feelings. By means of these the actor conveys a notion of the intensity of those emotions which sometimes force a man to break through the habits of the society in which he moves, and to resign himself to the instincts of nature alone.

Habits of the Vocal Organs.—Connected with this subject is the consideration of the purpose fulfilled by the uttering of cries and groans when in pain, either moral or physical. The utterance of those sounds supplies the deficiency of language during infancy; but there is another purpose fulfilled by it, and belonging to all ages, which is, that suffering is thereby mitigated, and this not only by the consciousness of exciting the sympathy of others, but chiefly by diverting the attention of the patient from his pain. In exercising his organs of motion he thus relieves the nerves of sensation. The individual, then, who under bodily suffering neglects to bellow and roar may enjoy the dignity of a hero or a martyr, but in this omission he deprives himself of a source of mitigation provided for him, and pointed out to him by Nature herself.

Habits of the Eyelids.—The opening and shutting of the eyelids are actions required by the necessity of keeping the surface of the cornea moist, which we are warned not to neglect, by the sense of irritation when it becomes dry. The liquor appointed for this purpose not being secreted on its surface, but being conveyed by ducts from the lachrymal glands to the external angles, a more or less frequent motion of the eyelids must take place in order to keep it equally diffused over the surface. Although this kind of sponging of the cornea is performed by voluntary muscles, yet even from infancy it becomes an involuntary action, and is carried on without any perceptible intervention of the will. There are, however, some exceptions, in individuals who, from affectation or other causes, practise blinking or winking, along with other grimaces not necessary to mention. These we shall altogether

dismiss from our notice. On an average, taken from observations made on five individuals without their knowledge, I find that the number of closures of the eyelids within the hour is 424. The intervals, however, are very unequal. In a young lady engaged in a light, amusing employment, the closures within five minutes amounted to 62 ; but when her attention was exclusively engaged on an important subject, they did not exceed 17. In observing this action in a great number, as in a public assembly, we shall always find those most anxious and most absorbed in what is going on to close their eyes least frequently. This fact is analogous with another phenomenon, namely, sighing, in which breathing, although an act necessary to life, yet, being performed by voluntary muscles, is in consequence liable to interruptions from the intrusion of mental emotions of a depressing or absorbing nature. Under these we are withdrawn from the influence of one of our best established habits, and actually forget to breathe for several seconds, until forced to it by necessity, when at length we make up for the omission by one deep inspiration, called a sigh.

Habit of the Eyelids in the Near-sighted.—It is well-known that near-sighted persons frequently bring their eyelids so close as almost to come in contact when wishing to see distant objects without the aid of glasses. The assistance thus obtained arises from the sudden contraction of the lids sweeping together the tears which happen to be on the cornea, so as to form a concave surface, which, with the circular figure of the cornea behind, forms a double concave lens. That the assistance thus obtained is not due to the narrowing of the field of vision is evident from the fact that it does not continue as long as the lids are maintained in the closed position, but is only momentary, as is well known to the near-sighted, and requires for its reproduction frequent repetitions of the contractions, suited to the quantity of the fluid that may be present. This is best understood by a figure ; but the improvement of the sight of distant objects obtained in this way causes the habit of peering peculiar to the near-sighted, and which often imparts to them a characteristic expression of countenance.

Habits of the Deaf.—In cases of dull hearing two habits are acquired,—first, the mouth is kept open ; and second, the hand is placed behind the ear, so as to form an enlarged concha directed towards the place from whence the sound proceeds. In order to ascertain the actual amount of assistance derived from these practices, I experimented on three individuals :—No. 1, with dull hearing from rupture of the membrane of the tympa-

num of both ears; No. 2 and No. 3, persons of average capability of hearing. The sound used was the ticking of a watch, held in the same position and in the same apartment. The following were the greatest distances at which the watch was heard:—

	Mouth closed.	Mouth open.	Hand behind ear.
No. 1, of dull hearing,	1 foot.	15 inches.	3 feet.
No. 2, of average hearing,	5 feet.	7 feet.	9 ,,
No. 3, of average hearing,	5 ,,	9 ,,	11 ,,

The average of the above:—

Hearing without help,	44 inches.
Hearing with the mouth open,	69 ,,
Hearing with the hand behind the ear,	92 ,,

This practice, then, of holding the hand behind the ear, so generally adopted by deaf persons, is to be regarded with some indulgence, inasmuch as by means of it they are enabled to hear at double the ordinary distance, and ought to be taken by others as a signal to raise the voice and to speak loud enough to be heard.

Habits of the Arms.—In the use of our fore extremities we have been instructed from early childhood to employ the right arm in preference to the left; and those who have disobeyed the maternal injunctions on this subject appear awkward, and are stigmatised as left-handed. This preference for the right hand, although arbitrary, and not founded on any anatomical differences, is yet universal, as far as I have ascertained, and certainly has existed from the remotest antiquity. In the Babylonian, Egyptian, and Greek representations of the human figure, we see the right hand scattering the seed on the ground, drawing the bow, wielding the sword, or holding up the emblems of royal authority. Along with the use of the right hand the organs of sensation as well as motion at the right side—as the eye, the ear, and the leg, are also used in preference to those of the left, and in consequence have their activity and growth promoted. Thus the right hand and foot require a larger glove and shoe than the left, and even the right whisker grows more than the left. The right eye is more widely opened than the left, and the symmetry of the countenance is generally disturbed by the muscles of the right side of the face being more developed than those of the left.

Habits of Locomotion.—Locomotion in man is performed

under peculiar conditions, he being the only one of the mammalia who walks exclusively on two legs. Yet, on closer examination, we shall find that his mode of progression is not so totally different from that of a quadruped as may be supposed: although unconsciously to himself, yet he swings his arms so as to correspond with his legs, in the same way as the four legs are moved in the quadruped. Unless interfered with by the drill-sergeant or the dancing-master, he acts under the same instinct, each arm moving at the same time as the opposite leg. The quadruped, at each step, supports his body on the left fore and the right hind-leg, or on the right fore and left hind-leg, but always so that each fore-leg shall be either raised or planted on the ground at the same time as the hind-leg on the other side. The simultaneous action of each of our arms with the opposite leg is universal, manifest, and without any exception, unless when the arms are otherwise engaged and restrained so as to disguise it, but in going along the street we observe all ranks and conditions to agree in this, that at each step, each leg is put forth at the same time with the swing of the opposite arm.

It is a general fact that quadrupeds with the shortest legs take the greatest number of paces within a given time, and among ourselves tall men take the slowest steps. Indeed, every man, when walking alone and uninfluenced by others, adopts a pace peculiar to himself. In a certain society in which it was necessary to walk through a long, dark, narrow passage before arriving at the place of meeting, it was a frequent practice among those within the apartment to call out the name of the individual approaching the door merely from the sound of his steps, and this they were generally enabled to do, although the society consisted of above thirty persons. The reason why each individual, when uncontrolled, adopts one certain pace in preference to another appears to me to depend on two principles. The first is, that, as in quadrupeds, the rate of going depends on the fore-legs, so in man the rate of going depends on the swing of the arms. This is rather an instinct than a habit, for it continues and appears invincible, although often interrupted and interfered with by our education, both military and civil. The second principle is that the swinging of the arms is altogether involuntary, and performed by gravitation. The proof of this is that the swing occupies the same time as the vibration of a pendulum of equal length, and that the rate of the swings vary with the length of the arms in different individuals, according to the law of gravitation.

Hence it is that tall men, as having the longest arms, take the slowest paces. This correspondence between the swings of the arms and the vibrations of pendulums of the same length, and the accuracy with which the action of the legs keeps time with them, is easy to verify by observing the walk of any individual who has not been tutored; as, for example, a countryman going quietly by himself along an unfrequented road. The most frequent rate is that of a pendulum of twenty inches, that being about the length of the arm of the adult in its ordinary flexed position, but when the individual wishes to quicken his pace he shortens his arm, by bending his elbow-joint still more, and when proceeding to run he bends both the elbow and the shoulder-joint, so as to contract it to the utmost. Thus the arm is used on the same principle as the *metronome*, for the purpose of beating time to the legs.

Man being peculiar among the mammalia in making no use of his upper extremities, either for sustaining or propelling the weight of his body, and his lower extremities having to undergo all the labour of progression, a necessary consequence must be an increased flow of blood to the lower limbs, and a tendency to hypertrophy of them, and atrophy of the upper limbs. In domestic fowl who have changed their natural habits so much as exclusively to walk, and to abandon the use of their wings, the muscles belonging to the wings lose the red colour which they have in the wild state, and exhibit in a very striking manner the effect of this perversion of the natural use of the parts, in the difference of colour between the white meat or what is called the breast, and the legs, of domestic fowl. Hence it follows that in the human subject, from the unequal division of labour, combined with gravitation, there must be a greater tendency in the lower limbs to all the diseases affecting the muscular and ligamentous structures. This is notoriously the case: and, besides these, we find in them other diseases, as varicose veins, which are peculiar to them alone.

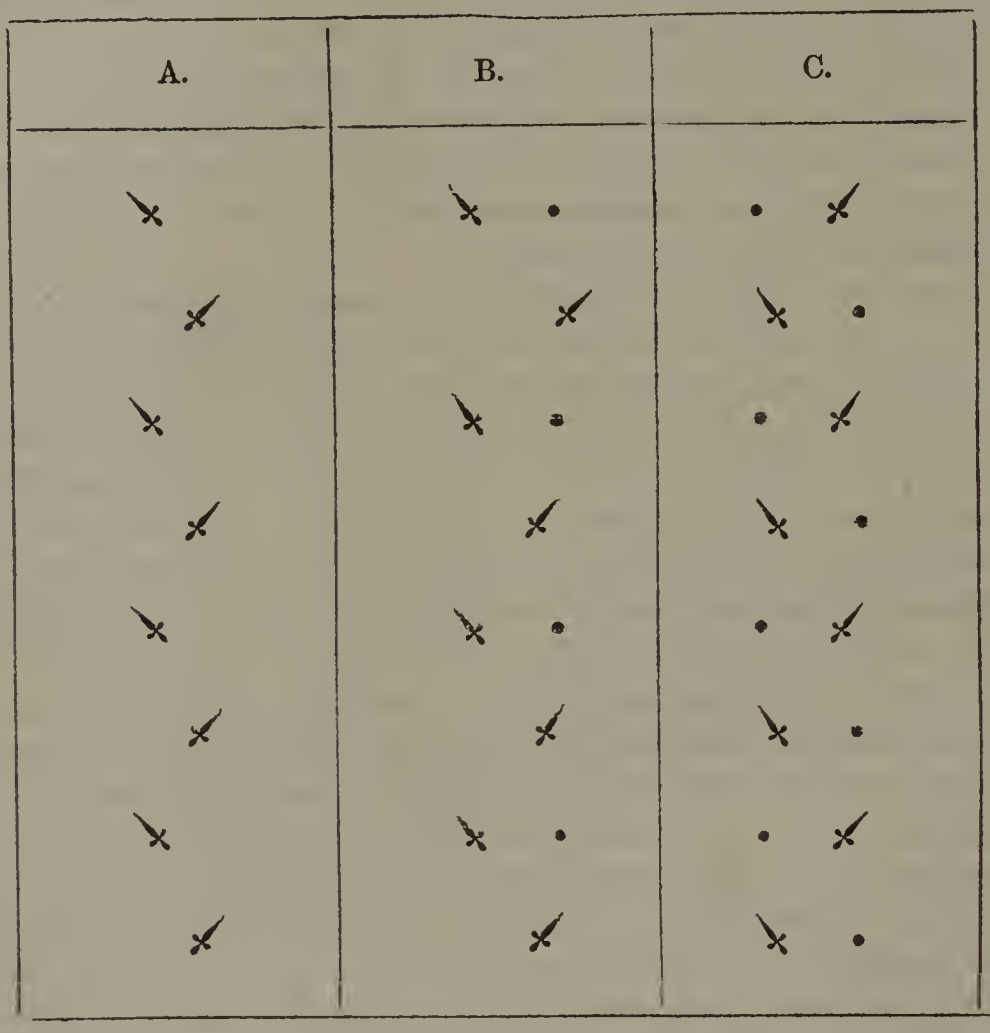
From the amount of labour thus thrown on the lower extremities, man has been impelled, from the earliest ages of the world, to resort to the assistance of other animals, and to construct vehicles of different kinds, in order to obtain assistance in locomotion. But amongst all these contrivances it appears strange that nothing has been done to equalize the labour of progression between the upper and lower extremities, by making the former take some share in it. Any assistance from this quarter has hitherto been sought for only by the lame or infirm, who

gladly avail themselves of sticks or crutches when suffering under pain or debility, but are glad to cast them away as soon as they are able to move without them. It is evident that we have some instinctive tendency to this mode of assistance, from the general practice which prevails of carrying canes or sticks, and which few are able altogether to resist. It is, however, not unworthy of science to inquire whether this mode of assistance should not be both more effectually and more universally used, and not, as at present, confined to those who are actually coerced by pain or infirmity.

When two sticks are employed, as light as possible, *so as not to interfere with the vibration of the pendulums formed by the arms*, and of the proper length, so as to enable them to be pressed firmly on the ground with the hollow of the hand, and, in obedience to instinct, placed, each of them, simultaneously with the opposite leg, then the individual has all the advantage of walking like a quadruped. It is true that, from our erect posture, the position taken by each stick must be almost on the same line with the opposite leg, instead of being in advance of it, in this resembling the gait of the giraffe, but no inconvenience results. The centre of gravity being in the line between the stick and the opposite foot, the symmetry of the gait is preserved, even more than in the ordinary walking without sticks. As for the use of one stick, as commonly practised, it affords a support only at every alternate step, and if any weight is laid on it, the symmetry of the gait is destroyed, and a tendency to habitual obliquity of the spine and pelvis must result; but with two sticks the individual has it in his power to take one-half of the weight of his body off his legs, and to place it on his arms, or, if not wishing for so much as that, he, even by a moderate degree of pressure on each stick, can obtain a very sensible degree of ease. A pressure, comparatively slight, with the stick on the ground, is equivalent to twenty-five pounds, and this pressure may be increased or modified to suit the requirements of the individual, being so much of the weight of the body taken off the opposite leg. An additional advantage not to be omitted is, that at each step the stick may be made not only an agent of support, but also of propulsion, by pressing on it at an acute angle, looking forwards, and that thus the sticks may be made to act the part of a velocipede.

What has been stated in the foregoing observations may become more evident by the following figure, intended to represent the tracks left by the pedestrian on the ground.

A represents the footsteps of an individual walking without assistance. B, the same of one using a stick in his right hand. C, the same of one using two sticks.



From the above it is manifest that, in addition to the other advantages of using two sticks, the centre of gravity is not shifting from one leg to the other, as in the ordinary walker, but that it is kept in a line more or less approaching the central point between the stick and the opposite leg.

As an experimental proof, I may add a trial made by a certain individual, weak, from different causes, on his lower extremities, but of the average strength of arms. By the use of two sticks employed in the way now mentioned he was enabled, after a little practice, to surpass, both in rapidity and long endurance of locomotion, the best efforts of four other persons, his juniors, and possessed of an average power of walking.

These are some of the observations which have occurred to me respecting involuntary actions performed by voluntary muscles, and which appear to have escaped the notice of sys-

tematic writers on physiology: many more remain to be considered. The investigation of such subjects, although apparently trivial, yet may become practically useful, and may lead to improvement in the exercise of many of our daily avocations.

Art. VI.—*The Cerebro-spinal Symptomatology of Worms, especially Tape-worms.* By Thomas P. Heslop, M. D., late Senior Physician to the Queen's Hospital, and Professor of the Practice of Physic, Queen's College, Birmingham.

(*Continued from* vol. xxvii. p. 275.)

The facts adduced, in reference to the causation of serious aberrations in the nervous functions by the presence of intestinal worms, will appear at a glance sufficiently numerous and cogent to warrant the statements with which I set out. Their significance is enhanced by the consideration that they constitute the whole number of my recorded cases during the past seven years, with one or two unimportant exceptions, too slightly reported to warrant any inferences affirmative or negative. In the discussion of questions of this kind it is far more important to obtain the entire experience of one observer, extending over many years, than to select the proofs of a given proposition from the cases of many persons, all of whom may possess equally illustrative evidence of the converse proposition, and none of whom may have taken the requisite precautions to exclude error. Cases so obtained, whether arranged statistically or otherwise, are very liable to lead to absolute error, and, at the least, expose the reader to the probability of forming an erroneous estimate of the frequency with which given results spring up under certain assigned circumstances.

I have observed that the symptoms of the presence of worms have, in fact, a striking uniformity, and give a peculiar physiognomy to a case. Since the first part of this Paper was in print I have seen a good illustration of this. A lady, about thirty-five years of age, of pale complexion, consulted me for most obstinate headach and general neuralgic phenomena. The senses were dulled; the skin dry; thirst considerable; urine much more copious than natural, and pale. Though doubtful of the real nature of the case previous to an examination of the urine, I yet ventured to hint that probably worms were at the bottom of her neuralgic complaints, and prescribed an anthelmintic draught. No worms were passed, and the urine was found, though of low specific gravity, to be free from any other

peculiarity. The idea of worms was almost abandoned, yet, three or four weeks afterwards, a very large lumbricus[a] was passed into the clothes while going up stairs, and its expulsion was attended with a certain amount of relief. At first sight, this case seemed to warrant the fear that some chronic kidney affection was the cause of the symptoms, and I did not feel satisfied upon this head until I had enjoyed the opportunity of a careful examination of the urine. But it was not the only time that such doubts have entered my mind in investigating the symptomatology of worms. There is the strictest similitude between the cerebro-spinal symptoms of some forms of Bright's disease, especially of that form attended with the hard, contracted kidney, and those attendant upon worms, particularly the tape-worm. So close is this likeness, that in cases where I should have otherwise predicted the presence of worms, my mind has been suspended in doubt until after the urine had been subjected to scrutiny.

This point is too interesting, and offers too many valuable considerations for our notice, in speculating upon the conditions of these symptoms, to be passed over without a little further comment. What—looking at the observations which have been already adduced—may be fairly termed the phenomena of a representative case of vermination in the adult? They are about as follows :—A man, with a pale face, but fair *enbonpoint*, presents himself to his attendant, complaining of dull headach, not limited to any particular region of the cranium, but perhaps more marked in the frontal region than elsewhere. This headach does not offer any marked exacerbations or remissions, but is almost constant, and sufficiently severe, without being excruciating, to render life, if not a burthen, at least unhappy. Giddiness is so severe that he often staggers about like one intoxicated; and when this symptom is present to a less degree, there is still almost continuously a sense of confusion and insecurity, which renders walking a serious effort. The ears are affected with a constant buzzing, and a great variety of noises, described sometimes as being like that produced by the boiling of a tea-kettle, sometimes like the letting off of steam from a boiler, not rarely like the rumbling of thunder. The acuteness of the sense of hearing is, at the same time, unimpaired. His vision is dull. Fine webs seem to be constantly before the eyes, so that every object wears a hazy aspect; at other times, dark spots or brilliant flashes obstruct vision. Next to the

[a] I may take the opportunity to observe, that wherever I mention "lumbrici" I mean the "ascaris lumbricoides;" and when I write "ascarides," the "oxyuris" or "ascaris vermicularis."

headach and giddiness, it is the increasing imperfection of this sense which most alarms the patient. He finds that in seizing objects his hands are not so thoroughly under control as formerly. They and the arms are in a state of constant tremor; and the legs are similarly, but to a less degree, affected. This symptom is sometimes so severe that he finds it difficult to hold objects firmly, unless he concentrates his attention upon his actions. He has a variety of unusual sensations about his body, all more or less referable to numbness. The stomach occasionally rejects its contents, and he is troubled with a general sense of uneasiness about the abdomen, sometimes with a sharp colicky pain. He has, perhaps, lately suffered a severe convulsive seizure, or been the subject of a transient stupor. If the patient be a woman, violent hysterical crises have occurred, or genuine epileptic attacks. The face is not merely pale; there is an aspect of languor and heaviness, much increased by a drooping of the upper lids in a severe case. Such is an abstract of the more common symptoms of worms, and I know of one disease only which presents a similar combination of morbid signs, and that disease is morbus Brightii. Fortunately the renal secretion is at hand to solve the difficulty and to exclude doubt.

This similarity of symptoms engendered by causes apparently so opposite as toxœmia on the one hand, and intestinal irritation on the other, has led me to doubt the generally received opinion, that the nervous phenomena of worms are connected with the mere results of these parasites, as irritants of the intestinal tract. There is no excentric irritation known to us which produces like effects, and all analogy is in favour of the view that a generalized lesion of the nutritive function, as indicated by a morbid blood-plasma, is the real source of these remarkable pathological states. This view is confirmed by the reflection that a profound lesion of the primary assimilating processes generally accompanies, and probably precedes, the generation and development of these worms[a]. And in fact, it is difficult to explain their presence, except on the supposi-

[a] Bremser uses the words, "verminous disease," to indicate the general condition on which worms depend, even when worms are not passed. His remarks are worthy of quotation, though the very imperfect knowledge at that time of the generation of entozoa detracts from their importance. "I intend," says this author, "by the term 'verminous disease,' a derangement, or rather a disproportion in the functions of the organs destined for digestion and nutrition; during the duration of this derangement there are produced or accumulated in the intestinal canal, substances by the aid of which there may be formed, under favourable circumstances, worms; but, nevertheless, there is no absolute necessity that their formation should result."—*Traité Zoologique et Physiologique sur les vers intestinaux de l'Homme.* Par M. Bremser. Traduit de l'Allemand par M. Grundler. Paris: 1828.

tion that a suitable nidus has been previously prepared in the shape of morbid secretions, wherein the germs can fertilize. To these germs probably most persons, both in civilized and uncivilized life, are pretty frequently exposed, yet a large majority of mankind undoubtedly escape being infested by them. It is consonant with all our knowledge of natural history to suppose that those who escape are in a physiological condition, have their secretions in a healthy state, and consequently offer no resting-place in which the ova of entozoa can become developed. Hence, too, the greater frequency of these parasites among the ill-fed and half-fed denizens of our great towns, a fact which does not compel us to seek for its cause in a greater exposure to the germs under such conditions. Dr. Elliotson very justly observes, that "generally speaking, these worms prevail more especially in proportion as the patient is weak. We know that persons who are exhausted from fever will become the subject of vermin. In extreme debility of the constitution, a patient may be cleaned several times a day, and be covered with a fresh crop of vermin! So it is, in general, within. The more weakness there is of the body, the more the entozoa thrive. Bad air, bad food, and the want of sun, will contribute to their appearance. When rabbits are kept in a bad place, they become subject to hydatids; as do also sheep in wet pastures"[a].

We find a further confirmation of these views in the circumstance that, though relief is speedy when the symptoms above related have been brought about by the presence of worms, it is by no means immediate, as it would be if a mere intestinal irritant were the sole condition of their existence. So far from being immediate, the relief consequent upon the expulsion of worms, in severe cases, is but slowly effected, even when we find no reason afterwards to suspect the presence of others in the body. This is very manifest in many of the cases, and deserves notice in a practical point of view, as it serves to demonstrate the necessity for careful dietetic observances, and judiciously applied medicinal agents for some period after the end in view has been apparently gained. Here, too, is the source of the frequent disappointment of patients, who begin to despair of cure when they observe a constant recurrence of the symptoms and of the parasites, in spite of powerful anthelmintics periodically administered. The palliative is the vermicide; the radical cure is to be found elsewhere, though medical doctrines lead to a reverse conclusion.

[a] The Principles and Practice of Medicine, Second Edition, p. 1106.

There are, confessedly, certain disorders engendered or maintained by worms, whose relief is strictly synchronous with their expulsion, whether effected by nature or art: such as hooping-cough, infantile convulsions; but these exceptions do in fact prove the rule. The nervous system in early life very quickly sympathizes with intestinal irritation, and a crisis occurs, such as is well calculated to draw the attention of the physician to the possible presence of worms, long before they have materially impaired the general nutritive functions. The species of worm present in most of these cases, too, is such as forbids the belief that a very marked interference with those functions is likely to occur. Ascarides in the great majority of these cases, and lumbrici in the rest, are the worms with which we have to deal. The former seem to infest the large intestine almost exclusively, and its extreme portion in most cases; while the lumbrici, though invading, by preference, the small intestine, do not offer, unless accumulated in great numbers, the enormous bulk so common in tænia, and are, therefore, less likely to interfere with the normal function of the part.

In reference to the aggravation of hooping-cough in certain states of the economy, Dr. Whitehead, in his third Report of the Manchester Clinical Hospital, says:—"By a similar kind of sympathetic irritability, the presence of worms in the intestines will aggravate the symptoms, or prolong the duration of hooping-cough almost indefinitely; in several instances in which the symptoms continued unabated unduly long, and where it was found that worms existed, the expulsion of these parasites was immediately followed by mitigation of the symptoms, and speedy cure."

It is, however, to be observed that these and similar symptoms are frequently to be noticed in tænia. Thus, Dr. Watson[a] gives a case from Bremser, "of a child eleven years of age, afflicted with tænia, who had a troublesome dry cough. It was observed that her cough was suspended for two months, just after a very large portion of the worm had been brought away by anthelmintic medicines. This kind of coincidence happened not once only, but three or four times; and, at length, when the whole of the worm had come away, the cough was permanently cured."

Dr. Graves[b] gives a case of a young lady who had fits of coughing of extraordinary intensity; the cough was dry, loud,

[a] Lectures on the Practice of Physic, Fourth Edition, p. 577.

[b] Clinical Lectures on the Practice of Medicine, Second Edition, edited by Dr. Neligan, p. 26.

hollow, and repeated every five or six seconds, night and day, when she was asleep as well as when she was awake. In spite of this terrible agitation, she did not fall away proportionally. Every imaginable measure was employed, but no relief followed. The case was "given up in despair." Some time afterwards Dr. Graves heard that she had been cured all at once by that ubiquitous medical practitioner, "an old woman," who had suggested a dose of turpentine and castor oil, for the purpose of relieving a sudden attack of colic; two or three hours afterwards the young lady passed a large mass of tapeworm, and from that moment every symptom of pulmonary irritation disappeared.

It is hardly necessary to draw attention to the frequency with which "fits" of every variety are produced by worms. As I have before observed, this is abundantly recognised so far as regards infantile life, though certainly insufficiently in reference to the adult. It is remarkable that wherever convulsive seizures are mentioned in connexion with worms, either by Willis or Heberden, lumbrici are alone mentioned[a]. This can hardly spring from ignorance of the distinction between round and flat worms,—as it is undoubtedly as old as Hippocrates,—but results, I believe, from observation of the superior liability to these seizures in persons invaded by this species. Their peculiar conformation, and resistant head, are favourable for attacks upon the wall of the intestines—Von Siebold believing that they are able to force asunder its fibres; and their tendency to wander to the anus or to the pharynx is one of their characteristics. Küchenmeister observes that "if the worm be disquieted by any causes, it begins to wander about in the intestine which it inhabits, producing all kinds of disorders, which may even lead to death. According to the irritability of the individual, the number of the wanderers, the place to which they have wandered, and lastly, according to the power of the worms themselves of asserting their vital activity, so varies the danger to which these wanderers give rise"[b]. These causes of agitation are internal and external. The former, seated in the worm itself, are, perhaps, as Küchenmeister suggests, only to be found in the sexual actions: it must not be forgotten that these are not, like tænia, hermaphrodite. The latter are in re-

[a] It is necessary, however, for the reader to observe, that, in these and other early authors, the word "lumbricus" is frequently employed as a general term for all worms, in accordance with its original Latin meaning, and not as by the moderns, in a *specific* sense.

[b] Manual of Animal and Vegetable Parasites, translated for the Sydenham Society, p. 415.

lation with the ingesta, some of which must be more or less repugnant to the parasite.

The singular frequency with which lumbrici are found in the bodies of those dead of tetanus has not yet obtained the attention it deserves. It is probable, too, that a more thorough examination of the intestines, in such cases, would reveal their presence still more often. My friend, Mr. West, of the Queen's Hospital, tells me that a young woman, aged 17, was admitted into that institution, under the late Dr. Fife, in the year 1855. She was anemic in appearance, and the catamenia were irregular. A peculiar "tonic convulsive condition" of the muscles of the right arm was noted on admission, which had resulted, as she stated, from a blow she had given to the thumb of the right hand while cleaning a pair of boots. She was believed at first to be suffering from hysteria, but she was seized with symptoms of trismus, and died in less than forty-eight hours. No appreciable lesion of the brain and spinal cord was discovered. All the thoracic and abdominal viscera were healthy. A lumbricus was found in the neighbourhood of the ilio-cæcal valve.

A deeply interesting case of similar nature is reported by Mr. Johnson[a], of Bedford. A boy, aged eight years, was brought to the Bedford Infirmary on the 24th of July, with a lacerated wound above the right elbow, caused by the wheel of a cart passing over the arm. Sloughing took place, and, on the 30th, a large sore, four inches by two and a half, was exposed. The boy went on extremely well until the 8th of August; his general health improved, and the wound presented a most healthy appearance. On that day symptoms of trismus made their appearance, and he was ordered two grains of calomel three times a day. On the 10th, paroxysms of opisthotonos occurred every three or four hours. On the 13th the gums had become slightly affected, and the paroxysms were not quite so violent. On the 15th he passed four lumbrici, five inches in length. From this time until the date of his death (August 25th), the paroxysms appeared to diminish very much in severity and frequency; but the length of time that these symptoms had lasted, viz., thirty-two days, had rendered him so weak and emaciated, that he died exhausted. The mucous lining of the upper part of the small intestine was found much inflamed, and in the upper part of the jejunum three masses of lumbrici were discovered, numbering thirty-six. Mr. Johnson believed that there was an intimate relationship between

[a] British Medical Journal, October 28, 1858.

the tetanus and the presence of the lumbrici—a belief which appears to be justly based on the facts of the case.

Last summer a boy, about fourteen years of age, was admitted into the Queen's Hospital, under my care, labouring under the most violent tetanus. He had been affected by these symptoms about two days. There was an obscure history of an injury, as usual, but nothing could be found about the body to justify the statements made. A few hours after admission he died. The examination of the body was deemed very inconclusive. Softening of a small portion of the dorsal cord was observed; but there was some ground for the suspicion that the injuries accidentally occurring during the necropsy might account for this. Lumbrici were found in the intestinal canal.

It is within the limits of fair speculation to suppose that in these cases, and others of a like character, the tetanic phenomena were excited by the lumbricus in persons who already were in a condition favourable to the development of such phenomena, but who might have escaped had the worm not been present. The case reported by Mr. Johnson especially warrants this opinion.

Many of my own cases tell a history of fits in connexion with worms,—often the most violent hysterical crises were observed, of which Case xlvii. is a good illustration. Genuine epileptic seizures were also several times observed. The subject of Case xlv. had been first seized with an epileptic fit five weeks before application. He was a boy thirteen years of age. There was nothing in the history of the case or in his conformation to account for the fits: the presence of bits of tænia and ascarides was the sole cause that could be arrived at. It is stated that he was conscious of the approach of the fit, which commenced with dimness of vision; a sort of tremulous movement then pervaded the whole frame, and he remained stupid after the fits, of which he had two nearly every day. Ascarides were several times observed in his stools during the period he was under notice, and their evacuation was attended with the disappearance of the fits.

Case xxx., a girl, aged 9, is an illustration of a common effect of worms, namely, sudden fits of insensibility. The occurrence of such attacks in the young should always excite the inquiries of the medical attendant in reference to the passage of worms. Case vi. was a woman, aged 32, who had suffered from fits, the first of which had been followed by the loss of the use of the right upper and lower extremity. This she had gradually recovered, but was subject to giddiness,

impaired vision, and headach. Anthelmintics brought away tape-worm; the headach was relieved, and no fit came on afterwards.

In discussing epilepsy Heberden[a] observes, that "in ætate puerili, membrorum distensiones sæpe fiunt ex lumbricis, aliisque intestinorum affectibus, quibus proinde medicamenta leniter purgantia auxilio erunt, et causam mali expellent." There is, I repeat, no lack of appreciation on the part of authors of the common causation of convulsive seizures in infantile life by worms, but a very inadequate estimation of the same conditions in the adult.

That able writer, Romberg, admits the importance of this subject in reference to epilepsy, though in every part of his learned treatise he appears to me to recognize but imperfectly the part played by worms in nervous affections. After discussing the centric and excentric causes of epilepsy, he says: "The next focus of epileptic affections that we have to consider is the gastro-intestinal tract. Irritation proceeding from the intestinal canal, and of its glandular apparatus, the former more frequently in children, the latter in adults, acts as a cause of epilepsy; it may be induced by helminthiasis, and especially by the lumbricus, less frequently by tænia and ascarides, by catarrh of the stomach and intestines, and by inflammatory affections of the liver"[b]. He gives the case of a boy, aged 5, who had been subject to attacks of eclampsia, which occurred daily between 4 and 5 o'clock in the morning, and were preceded by headach. As there was a large accumulation of ascarides, purgatives of calomel and jalap were ordered, the effect of which was, that no regular paroxysm occurred for six days, but every day, at the same time, headach and giddiness, and an occasional distortion of the right ala nasi and angle of the mouth, supervened. Some days afterwards the fits recurred at the same hour, and were finally got rid of by means of quina.

In my remarks on Case XXVII. I have observed that I have felt much hesitation in giving a name to some of the seizures produced by worms. If "excentric eclampsia" would appear the fitting term for some of the cases, especially those occurring in early life, and, for the most part, caused by lumbrici or ascarides, it would seem inapplicable to many others, which rather deserve the appellation of toxœmic eclampsia, and are

[a] This sagacious author places lumbrici among the causes of vertigo, which he treats as a substantial malady. He says: "Lumbrici modo antecedunt vertiginem." Soëmmering's Edition, p. 351.

[b] A Manual of the Nervous Diseases of Man; translated for the Sydenham Society, p, 214.

assimilated to the well-known nervous lesions of Bright's disease, as before mentioned. But it is not so important to agree upon the precise nosological phrase wherewith to characterize these conditions as to thoroughly appreciate the diverse and often mixed character of these paroxysms. Intense hysteria, with the most violent jactitations, or, on the other hand, attended with an imperfectly developed cataleptic state and profound repose, sudden insensibility without convulsion, every variety of convulsive seizure attended with insensibility; or tonic spastic states, without unconsciousness, may constitute the particular expression of nervous sympathy, and yet acknowledge but one origin.

Few authors omit to place worms among the causes of chorea, although they are not named by Heberden in this relation, and Romberg[a] gives but little countenance to the doctrine. He states that the disease can scarcely be shown to be produced by irritation. "Reflex irritation most frequently resides in the intestines and genital organs; but under this head a more important part has been ascribed to helminthiasis than it is found to merit on closer examination." Notwithstanding, this author gives one illustrative case. A boy, aged six years, in whose fæces the mother not unfrequently discovered traces of ascarides, rapidly recovered under the employment of calomel and jalap powders, which brought away a large quantity of the oxyuris vermicularis. I arrived at the same conclusion with Romberg some time ago, from observing the infrequency of worms in the history of chorea. This disorder, indeed, seems to belong to the diathetic neuroses, and to acknowledge but rarely intestinal or other irritation for its cause. The subject of the nineteenth case was suffering from chorea, and had passed pieces of flat-worm. But here there was a marked systolic bruit. In such a case the rheumatic diathesis, or, in others, an extreme nervous mobility, may be the predisposing condition, while the presence of worms, or a fright, may be the immediate excitant[b].

I am indebted to Mr. West for the following details of a case of chorea. A woman, about twenty-five years of age, was admitted into the Queen's Hospital, under Dr. Fife, labouring under a severe attack of this disorder. She was a stout, healthy-looking girl, of sanguine temperament, and never had any illness until about a fortnight before admission, when spas-

[a] *Op. cit.*, p. 59.

[b] See the author's paper on the Connexion between Chorea and Rheumatism, in the Number of this Journal for November, 1858.

modic movements of the muscles of the face were noticed. These gradually extended over the whole body. Her gait became unsteady; she was unable to feed herself; articulation was very imperfect, and necessitated laborious efforts; there was considerable febrile excitement; the pulse full and bounding; face flushed; skin dry and hot; there was no history of rheumatism or fright; catamenia regular. The restlessness and jactitation became extreme, and finally, delirium of a maniacal character supervened, and death was ushered in by coma. The necropsy displayed congestion of the lungs and of the cerebral vessels, but nothing to account for the phenomena of this severe case, excepting two lumbrici, about six or eight inches in length, in the small intestine.

Bremser[a], who admits that persons labouring under worms —or rather, to use his distinctive phrase, the verminous malady—experience from time to time headach and singing in the ears, and have dilatation of the pupil; yet throws doubt upon the reality of the bond between certain grave nervous disorders and the parasites. He supplies us with some very curious cases which deserve quotation here. One, reported by M. Serres as a verminous affection simulating rabies, is as follows:— A child, thirteen years of age, was bitten by a mad dog. Six months afterwards all the symptoms of hydrophobia appeared, and he died two days afterwards. The necropsy revealed nothing extraordinary, with the exception that the large intestines were filled with ascarides, which completely obstructed their cavity. Serres and another physician attributed the death, not to the bite of the dog, but to the worms. This case is closely analogous to those of tetanus previously mentioned.

Krause is quoted as having seen a case of a young man, of robust constitution, aged 31, who had been attacked for many years with paroxysms of involuntary laughter. At every accession he experienced a malaise, which was relieved only by lying down flat on his belly. None of his previous advisers had questioned the patient about worms, which he admitted having passed some years before. The administration of efficient vermifuges immediately relieved him of all his disagreeable symptoms. Another young man, mentioned by Girandy, presented some very singular symptoms, one of which was that he found it impossible to walk over any substance, however small, even a sheet of paper. Every time he endeavoured to conquer this difficulty he fell into a state of syncope. Vermifuges effected the evacuation of many worms, and a cure resulted. A case is

[a] *Op. cit.*, p. 367.

quoted from Mœnnich, of a child between two and three years old, previously robust, who was suddenly attacked with paralysis of the lower extremities, strabismus, and distortion of the features. After the administration of vermifuges he passed eighteen ascarides, with a great quantity of glairy matter, and his health was re-established.

Bremser relates also the case, seen by himself, of a boy, nine years old, who had suffered from very violent and frequent attacks of epilepsy ever since he was two years old. He had also passed pieces of tape-worm. He was "fortunate enough to relieve his patient of the rest of the animal, and from that moment he had no further paroxysm of epilepsy." Bremser saw the boy five years afterwards, and relates that he had enjoyed perfect health in the interval. It is certainly sufficiently remarkable that so well read and experienced an author should write so dubiously of the general deleterious effects of worms upon the economy—his whole chapter on the diagnosis of their presence, and on the derangements which they may entail, being rather an attempt to ignore the conclusiveness of the evidence of such derangements than to give an exposition of their nature. Nay, he goes so far as to state that his reason for entering upon an account of the therapeutical methods proper to be adopted is connected only with the circumstance that every man who feels sure that he is infested by worms desires to be relieved of them. Bremser's chapter is, in fact, what he himself finally terms it, "a defence of these animals."—p. 400.

This author's treatment of his subject is, in truth, as the title of his treatise indicates, rather physiological than clinical; and some of the most authoritative works on the same subject deal with it in the same spirit. Küchenmeister expresses the opinion that the ascaris lumbricoides, when staying quietly in the intestine, and when not occurring in too great numbers, brings but little danger to the constitution. "As a general rule," says this author, "the host and his guests live very well together, and give one another very little mutual trouble."—p. 414. He discusses the phenomenology of tænia in a scarcely less contemptuous style:—"The stronger an individual is in himself, the less the irritability of his nervous system, the fresher his colour, the more regular his appetite and nourishment, the better his food, and the less he is inclined to diarrhœa—in one word, the less tendency he has to chlorotic phenomena, the less does he complain of his symptoms when he suffers from tape-worm" p. 142. I find myself able to agree with this latter passage, though in a different sense from the author; for I understand by it only that by so much as a patient is affected with

the ordinary symptoms of the parasite, in such proportion does he suffer from it. But this fact surely does not require such gravity of exposition. It would appear that the natural historical study of an animal, even so degraded in the animal scale as an entozoon, is attended with such peculiar charms, that physicians who devote themselves to such pursuits become attached to their object, and experience difficulty in assenting to the harmful nature of beings to whose investigation they have allotted so much valuable and, it must be admitted, well-spent time. This remark will not apply to M. Louis[a], who brought habits of minute clinical investigation and unrivalled powers of numerical arrangement to bear upon the question. The most careful disquisition upon the symptoms of tape-worm which we at present possess is unquestionably his well-known essay. That this distinguished man has so inadequately appreciated the cerebro-spinal disturbances attendant upon this parasite is, I think, owing to the unfortunate incident that his inquiries extended only over ten cases,—a number much too small to warrant, or, at any rate, to give security to the inferences drawn from them. Like everything else which has proceeded from the pen of Louis, this memoir has enjoyed the first place in professional estimation, and has given the tone to the statements of numerous subsequent authors. Dr. Watson has based his account of the symptoms of tænia nearly exclusively upon Louis's cases; and the statements of a writer so justly esteemed have, doubtless, mainly contributed to the formation of the common medical opinion. He gives the following as "probably the most distinctive" of the symptoms:—"Uneasy feelings in the epigastrium, which often abate, or are removed by eating; the appetite generally craving, but sometimes bad; itching of the nose and of the anus; nausea, colic, giddiness, a sour breath; less frequently loud borborygmi occur, and sometimes convulsions." This statement, although comprising no symptom which is not frequently met with in vermination, includes several which are infrequent in tænia, omits some of the commonest and most characteristic, such as headach, noises in the ears, flashes and webs before the eyes, tremors, &c.; and gives to the nervous phenomena in general an undue subordination in the general array of symptoms. But Louis supplies an authority for the whole.

This physician's observations were made in the year 1824 on patients in the Charité, Paris; and I think it desirable to give here an analysis of his cases, so far as they bear upon the

[a] Mémoires ou Recherches Anatomico-Pathologiques. Paris, 1826.

subject of this memoir. Case I. A woman, aged 19, had suffered from tape-worm from infancy, and for three years from frequent singing in the ears, and headach; sometimes from numbness and feebleness of the limbs. The expulsion of a tænia was attended with perfect relief from all symptoms. Case II. was a woman aged 35; had passed worms in her stools for four years. From that time she had suffered from headach, insomnia, pains in the limbs; and for two years from noises in the ears and weakness of vision. Case III. A woman, aged 30, had been in bad health for ten years, and for eighteen months had passed fragments of tænia. Since the first period she had been subject to hysterical attacks. Many tæniæ were evacuated, according to Louis; and several months afterwards she was observed to be in good health. Case IV. was a soldier, who had suffered for twelve years from tænia. He was tubercular. Pains in the limbs and cephalalgia had existed for six months, which seemed to have relation with the augmentation of the cough as his general malady proceeded. Great amelioration was effected by the vermifuge employed. Case V. was a Swiss who had been troubled with tænia for a year. A sensation of weakness was complained of; but it is expressly stated that he complained of no pain anywhere. Case VI., a man who had passed the worm for nine years. He complained of great weakness and sense of fatigue, but had neither cephalalgia nor impairment of the special senses. Case VII., a man aged 41; had suffered for ten years from the parasite. He had neither suffered from cephalalgia, pains in his limbs, or alteration of vision. Case VIII., a boy twelve years old, had passed tænia for fifteen months. It is stated that he had no cephalalgia, cramps, or pains in the limbs. Case IX., a man aged 72, noticed tænia in his stools eleven months before. There was no cephalalgia. Case X., a workman aged 49, had passed almost daily for ten years fragments of tænia. Pains in his limbs were greatly complained of; but there was no cephalalgia.

In his resumé, Louis assigns the "principal symptoms" as being colics; pains in the belly, of a varied description; itching around the anus, and at the extremity of the nose; a more or less marked derangement of the digestion and appetite, pains in the epigastrium, *rarely cephalalgia*, often, on the contrary, pains and lassitude in the limbs. He further declares that when pains in the belly, colicky pains, more or less severe and frequent, unattended with diarrhœa, exist for a certain period, accompanied by itching of the nose and anus, they indicate, in an almost certain manner, the existence of a worm in the intes-

tinal canal. These symptoms have in their union a remarkable aspect: they are not met with but in verminous affections; and we cannot well conceive these without them (p. 554). This author ignores the nervous phenomena by merely observing of them that they have nothing specific about them, and, by consequence, cannot have a place allotted to them among the diagnostic symptoms. Dr. Watson, on the other hand, admits that the diagnosis is *strengthened* by the presence of these symptoms. The first point that struck my attention in perusing Louis's memoir was the absence of all mention of tremors, a symptom so frequently present in my cases, and so constantly complained of by the patients. My suspicions of the presence of worms have often been first aroused by the evident tremulousness of the hands and the faltering of the speech. Another very common complaint, giddiness, is not so much as alluded to by Louis; yet the records of my cases offer abundant evidence of the important part which this symptom plays in the disorder. Headach occurs but three times among the ten cases; and in one the author evidently believes it was produced by the cough. But my experience leads me to the conviction that this symptom is by far the most constant of all those attendant upon the malady. Convulsive seizures are mentioned but once, and then only as hysteria in the third case. But it must be superfluous to remark upon the copiousness and conclusiveness of the evidence which demonstrates the connexion between convulsive attacks and worms. Noises in the ears occurred only in two cases; and weakness of vision once. But there is a too frequent repetition of these phenomena in my own cases to allow me to doubt their value as aids to diagnosis.

Louis paid special attention to the pupil, which, in all his cases, was of the natural dimensions, although its dilatation has been often insisted upon as one of the indices of worms. Thus Bremser, one of Louis's predecessors in these in u-ries, while mentioning singing in the ears and headach among the signs by which we can recognise the presence of intestinal worms, also observes that the eyes lose their brilliancy, they become wan, the pupil is enlarged, and the lower lids are encircled with a bluish zone[a]. I regret that the state of the pupils is mentioned in ten only of my cases. In four, they were natural; in four, dilated; in two, contracted. One of these latter is also said to have had "sluggish pupils."

But the positive statements of Louis are also worthy of our

[a] *Op. cit.*, p. 354.

attention. Among these is the pain in the belly. There can be no doubt that this is a very frequent symptom, as indicated in my cases also; but it has nothing about it characteristic, nothing to suggest inquiry as to worms; and it is sometimes altogether absent, as in Cases XLIII. and XLV., though stated to have been present in all Louis' cases. Occasionally flatulence and tenderness exist, when pain is wanting, or but little marked. The varieties and degrees of this symptom are, confessedly, very numerous; and not unfrequently it is absent over an extended period of a case, and suddenly makes its appearance with great severity. Thus in Case XLVI., it is observed that the patient had "a great pain occasionally in the epigastrium." My general impression is very strong that headach and giddiness are at least as frequent phenomena in the verminous malady of the adult as pains in the abdomen. In the fifty cases here recorded by me, the former symptoms are constantly mentioned; the latter are often wanting. But I refrain from giving a numerical ratio of the phenomena, for I am well aware that in many of the cases the abdominal symptoms did not receive the full attention bestowed upon those affecting the nervous system.

The appetite, though so much relied upon by the vulgar, offers but little worthy of notice. It is sometimes augmented, sometimes diminished, occasionally capricious, but often unchanged. No diagnostic can be drawn from it. Even in children, a marked voraciousness of appetite, so much associated by nurses with worms, is far more often the result of tubercular disease. One only of Louis' cases is stated to have had decided vomiting, an observation fully borne out by experience; its absence is indeed worthy of note, considering the occasional severity of other symptoms connected with the abdomen.

Louis assigns the next place, in order of diagnostic importance, to itching of the anus and nose. But the former symptom was absent in three-tenths of the cases, and the latter in three-fifths; one or other of these symptoms, however, was present in all but one, though in several but little marked, and absent with a curious frequency at the actual moment of observation. The fact of these symptoms being ordinarily absent over a considerable period of the case, deserves attention. They are so trivial as to be easily forgotten by the patient, and, unfortunately, the more frequent itching of the anus is very likely not to be mentioned by females, unless pointedly inquired into. Both of these phenomena appear to me to be related closely to the neighbourhood of the worms to the anus, and to be more manifest in early than in adult life. They must be viewed as

direct or reflex irritations, and are, probably, as Louis suggests, sometimes absent from the constitutional insensibility of particular individuals to sensations of an itching character. But this very consideration greatly militates against their diagnostic value. Allowing full weight to such reflections, however, it cannot be denied that these symptoms are of much importance, for, when markedly complained of, worms are usually present. The general recognition of their semeiological value is, indeed, so complete, that few persons think of worms as the possible cause of a given series of symptoms, unless the declaration of the patient either that they have passed some, or that they have suffered from these itching sensations, comes to the aid of the physician; while, on the other hand, in the absence of such declaration, he is very apt to ignore the whole subject. These symptoms are, notwithstanding, like many others, of high affirmative significance, but of very low negative value; and it is the necessity for a more complete appreciation of this, which loudly calls for a review of our present state of knowledge. Küchenmeister quotes from Seeger a valuable table of the comparative frequency of particular symptoms, from a statistical table of 100 patients with tape-worm, which yields a widely different result from that arrived at by Louis; and far nearer, though still with important differences, that which my own experience would warrant. "Sixty-eight times there were cerebro-spinal affections, and partial or general convulsions (for example, epilepsy, hysteria, melancholy, hypochondriasis, abdominal spasms, dyspnœa, and convulsive coughing), which may even rise to maniacal attacks, and mental weakness; forty-nine times, nausea, even with vomiting and fainting; forty-two times, various pains in the abdomen; thirty-three times, disordered digestion and irregular evacuations; thirty-one times, irregular appetite and voracity; nineteen times, periodical, habitual headach, usually on one side; seventeen times, sudden colic; sixteen times, undulatory movements in the abdomen, up to the chest; fifteen times, dizziness or delusions in the senses, and defects in the speech; and eleven times, shifting pains in various parts of the body." Küchenmeister refuses to ascribe these symptoms to the worm; and his reason is, that even when it has been expelled, they do not disappear. He also quotes, half-approvingly, the Abyssinian belief, that tape-worm only thrives in a healthy intestine. I have already observed that the expulsion of the tape-worm may not take away the verminous malady; and that the vermicide must be held as preliminary only to a course of measures directed against the condition which maintains the existence of the parasite.

Such arguments, therefore, as those of Küchenmeister must be held as inconclusive.

Lebert[a] justly estimates the importance of morbid secretions in the intestinal tube, "which may favour the development of entozoa." It is thus that sick or ill-nourished children present lumbrici more than those in sound condition. Equally, we more frequently meet the tricocephalus in the diseased intestine, in typhoid fever for example, than in the sound digestive tube[b]. There is nothing in reference to the secondary accidents of worms, according to this learned pathologist, more instructive than the material and functional changes that they produce in organs; but he is compelled to admit that "this part of pathology has not hitherto been the object of a sufficiently rigorous observation, and that there is here an unhappy chasm in our knowledge." M. Lebert is himself inclined to take a sceptical survey of these secondary phenomena, though allowing that lumbrici may be the principal cause of choreic or epileptiform phenomena. Dr. Farre[c] has exhibited a just recognition of the nervous phenomena of worms in his excellent essay on this subject. Among their remote influences, he classes "a disordered condition of the cerebral system, as manifested in the frequent occurrence of headach and giddiness, with singing in the ears, disturbed sleep with grinding of the teeth and sudden waking alarm, and the prevalence of somnolency, indolence, or ill-temper. The symptoms have, in some instances, run so high as to cause the case to be mistaken for one of hydrocephalus; but the pain in the head, dilated pupil, convulsions, and other signs imitating the true disease, have suddenly subsided on the removal of the exciting cause"[d]. This author also alludes to trismus, tetanus, and hysteria, and various affections of the senses, as referable to worms, but in classing hysteria as one of the disorders rarely traceable to worms, has underrated its frequency. In the catalogue of symptoms produced by each variety of worm, Dr. Farre has also given a just prominence to the nervous system, but has omitted all mention of tremors, and alluded to aberrations of the senses, only as revealed by "dulness of vision" in cases of tænia.

Dr. Joy[e], while giving an extensive survey of the general symptoms commonly seen in vermination, appears, on the

[a] Traité d'Anatomie Pathologique Générale et Spéciale. Tome premier. Paris: 1857.

[b] Page 400.

[c] Tweedie's Library of Medicine, vol. v. London. [d] Page 233.

[e] Cyclopædia of Practical Medicine, Article, "Worms."

whole, rather doubtful of their real relation to each other. He was evidently strongly led in this direction by the paper of M. Louis, already quoted, and by the statements of other foreign authors. Among the symptoms which he considers most ordinarily met with in tænia, we find no allusion to the nervous system, with the exception of "heaviness of the head, and a stupid, confused feeling, dulness of sight, though the pupils were natural." Dr. Baillie[a] gives "giddiness" and "occasional convulsions" as the sole nervous phenomena, among the symptoms which he considered indicative of the presence of worms, though Louis never mentions these symptoms. My own experience is here fully corroborative of that of Dr. Baillie, and, I may add, of Heberden.

M. Hippolyte Cloquet[b], though supplying an extended list of symptoms of worms—among the rest, trembling of the limbs and vertigo—omits all mention of nervous symptoms among those he deemed characteristic, with the exception of "dilatation of the pupils." Dr. Joy, looking upon a diagnosis as almost impossible, believing that even the presence of worms in the stools affords no certain proof that they were the cause of the coexistent symptoms, describes the indications of the strumous diathesis, after Rudolphi, as enabling us to guess at their presence without much risk of being mistaken, because these animals "form a very frequent complication in strumous disease." But this surely cannot be deemed a satisfactory method of evading the difficulty.

Dr. Copland has devoted considerable space to the natural history of human parasites, and has levied heavy contributions upon Küchenmeister and Von Siebold, but has described in a very curt manner the symptom produced by them[c]. This is the more remarkable, as he states that "recent writers have been more intent upon the microscopic descriptions of these parasites, and upon drawing minute distinctions, &c., than upon more useful and practical considerations connected with them." The statement of Küchenmeister in reference to ascarides, of both species, that very generally the host and his guests agree very well together, seems to have rather unfortunately affected the usually sound judgment of this admirable author; for, among the symptoms produced by these worms, we find scarcely mention of the nervous phenomena. It is worthy of note, that Dr. Copland says that itching of the anus

[a] The Morbid Anatomy of some of the most important Parts of the Human Body, p. 217. Fifth Edition. London.

[b] Quoted by Dr. Joy in his article.

[c] Dictionary of Practical Medicine, vol. iii., part ii.

is "rare," unless upon the passage of a worm—a statement which is, I believe, well-founded. His account of the symptomatology of tænia is still more unsatisfactory, and still more influenced by the same authority. Seeger's account of this subject, as previously quoted, is given, but Dr. Copland merely observes that "these symptoms are deceptive." In his general view of the symptoms produced by worms in the digestive canal, he allots but a scant place to the nervous system—headach, tremblings, singing in the ears, &c., not being mentioned, though vertigo is given among the signs of a general verminous cachexia.

Heberden[a] has written with his usual sagacity upon this subject, and, whenever copied by subsequent authors, has, in the main, given a proper direction to their statements. After naming the most common parasitic worms of man, he says:—"Mala, quæ ex his oriuntur, quæque his expulsis finiuntur, sunt dolores capitis, vertigo, torpor, somnia tumultuosa, somnus terrore et clamore abruptus, distensiones nervorum, febricula, sitis, pallor, sapor malus in ore, anima fœtida, tussis, spiritus angustus, prurigo nasi, dolores ventriculi, nausea, fastidium, cupiditas cibi nimia, macies, tenesmus, prurigo ani vespere, postremo pelliculæ et mucus dejectus." This admirable description of the results of worms wants but few additions:—"tremores, vitia auditus, tinnitus aurium, muscæ volitantes, perturbationes visus et tota cohors hystericorum affectuum, lassitudo et dolores membrorum"—constitute nearly everything which my experience would enable me to add to it. The order in which the symptoms are arranged is not less worthy of remark. Heberden clearly believes headach and giddiness to be more important indications of worms in general than errors of appetite, or even itching of the nose and anus, and assigns them a much higher place than pain in the belly. He considers itching of the anus, most troublesome at night, to be almost always present in ascarides (thread-worms), and to be the most certain sign of their presence—an opinion with which most persons will be disposed to agree. While fully admitting the importance of the general symptoms of lumbrici and ascarides, he yet declares that sometimes their presence will scarcely be suspected, unless there is either itching of the anus or they are found in the motions. But he says of the tæniæ, or "lumbrici lati," as he terms them, that they bring the gravest evils—"gravissima damna"—upon the body; and alludes to two

[a] *Op. cit.*, p. 214. This author employs the word "lumbrici," as a general term for all worms which infest the interior of the body.

cases which had occurred to him, in which there was reason to suspect a tænia had induced epileptic paroxysms, mania, and fatuity.

It is remarkable that Cullen makes scarcely an allusion to worms in his nosology and in his "Practice of Physic;" the only place in which they are mentioned being under the head of "epilepsia occasionalis," as one of the causes of that affection. I believe the word "vermes" never occurs in Sydenham's works, although he treats of several affections which we might have imagined would have suggested the consideration of worms.

Dr. Marshall Hall[a], in the work least worthy of his fame, in his section on "vermes," ignores the nervous symptoms *in toto*. There are no symptoms which positively indicate the presence of tænia, according to this author. We can only suspect its existence from a sense of gnawing pain in the stomach; give a cathartic, and examine the evacuations! This is the sum of the information given to us by this celebrated writer on the nervous system. Professor Bennett[b] does not allude to the nervous symptoms observed in tænia, in recording the few cases adduced by him in his late important work. M. Grisolle[c] follows Louis closely in his observations on tænia, and therefore pays a higher attention to the local than to the general phenomena produced by the parasite. Dr. Wood,[d] of Philadelphia, has, on the contrary, given an excellent description of the symptoms produced by each variety of intestinal worm, and more thoroughly appreciates the serious nature and frequency of the nervous symptoms than any recent author with whom I am acquainted. He, like M. Grisolle, quotes the results arrived at by M. Wawruch, of Vienna, and which are too valuable to be passed over. During a period of twenty years the Professor had seen 206 cases of tape-worm,—a number sufficiently numerous to warrant positive results. The following is his summary of the symptoms:—Dull pain in the forehead, giddiness, buzzing in the ears; dulness of the eyes, which are surrounded by a dark circle; œdematous eyelids, dilated pupils, frequent and spasmodic movements of the eyes; alternate paleness and flushing of the face, paleness of the lips, peculiar movements of the nose and mouth; emaciation, alternate loss and excess of appetite, cravings for particular articles of food; offensive breath, furred tongue, spitting and vomiting of thin mucus in the morn-

[a] Principles of the Theory and Practice of Medicine, p. 398. London, 1837.
[b] Lectures on Clinical Medicine. Third Edition. Edinburgh, 1859.
[c] Traité Elémentaire de Pathologie interne, tome second, p. 410. Paris, 1850.
[d] A Treatise on the Practice of Medicine, vol. ii. p. 658. Fourth Edition.

ings; itching at the nose, anus, and vulva; grinding of the teeth, especially during sleep; constriction of the throat, swelling of the belly, gurgling, shooting pains, and a sense of pinching about the umbilicus; a feeling in the morning as of a foreign body moving in the bowels; amelioration of all the symptoms under the use of farinaceous food, hot bread, and coffee; finally, depression of spirits, and a train of nervous derangements in protracted cases. "Sometimes," adds Dr. Wood, "the nervous disturbance amounts to convulsive movements of an epileptiform or hysterical character; and when these occur in a man with signs of an abdominal disorder, the possible existence of the worm should be suspected."

This latter remark well deserves to be kept in recollection by the clinical student. In a case presenting the symptoms alluded to, in the absence of the signs of any special brain disorder, the existence of even a few ill-defined disturbances in the digestive functions should arouse suspicion and inquiries relative to the existence of worms.

Bamberger[a], in an essay of great merit, on the worms which infest the intestinal canal, says, that if an individual, particularly in the early periods of life, frequently exhibits a variety of irritation phenomena in the digestive tract, without any very manifest basis, and which are divided from each other by perfectly or nearly free intervals of alternating diarrhœa, constipation, and a normal condition of the intestines; variable condition of the appetite, occasional nausea and vomiting; colicky pains, and unpleasant sensations in the belly, which appear either without obvious cause, or after the ingestion of certain kinds of food. And if, at the same time, there are sympathetic irritation phenomena in other organs, such as itching and burning at the anus, at the genitals, in the nose, leucorrhœa, urinary troubles, dilatation of the pupils, headach, giddiness, and such like, we are led to the presumption that worms are present. This author also specially alludes to the sympathetic and reflex phenomena of tænia, as consisting of itching in the anus and nose, headach, giddiness, hazy vision, and dark spots before the eyes, singing in the ears, palpitations of the heart, cardialgia, increased salivary secretion, vomiting, feelings of faintness, pains in the joints, changed disposition. Bamberger seems to admit spasms and convulsive seizures, like hysteria, to be only observed among women affected with tape-worm. He exhibits an equal scepticism in reference to these latter

[a] Virchow's Handbuch der speciellen Pathologie und Therapie, Band 6, Abtheilung 1, Halfte 2, p. 481. Erlangen.

symptoms in ascaris lumbricoides; and similarly declares that the thread-worm appears never to give occasion to important disturbances—the most frequent symptom by which we are made aware of its presence being itching and burning of the rectum. Admitting the value of this symptom, Bamberger is surely injudicious in thus limiting the symptomatology of this variety of worms. Hasse[a] repeatedly alludes to worms as causes of cramps, epilepsy, eclampsia; and observes that the irritation of worms is commonly received as a source of the last malady. In quoting Moreau's statistics, which showed, out of 240 epileptic women, 20 had suffered from ascarides, three from tape-worm, he remarks that "possibly among many of the patients this circumstance of worms had been forgotten or unheeded" (p. 270). Both Bamberger and Hasse, like Romberg, throw great doubts upon the frequent causation of chorea by worms, in which, as I have before observed, my observations tally with theirs.

Such diverse statements as those now quoted lead naturally to the conclusion that something is yet needed to be added to our knowledge ere a precise recognition of the symptoms and diagnosis of worms will be arrived at. Authors in the last century did, undoubtedly, as stated by Lebert and many others, greatly exaggerate both the frequency and the semeiological value of particular collections of symptoms of the verminous malady. But it is equally true that a reactionary scepticism has thrown into an unjust obscurity these phenomena, and in many instances has denied some of the most ancient and best established facts in medicine. It must be allowed, as I declared at the outset of this memoir, that the zoologist has placed exact knowledge of the natural history of the human entozoa at our disposal,—such knowledge, as admitted by Virchow, as answers "all reasonable expectations;" and it is satisfactory to know that we are not any longer obliged to speak in such disparaging language as our predecessors of the value of anthelmintics,—no one section of Materia Medica having been more singularly enriched of late than this. In spite of this, the knowledge of the symptomatic and diagnostic relations of worms has very manifestly retrograded. It would be, perhaps, more correct to say that this retrogression has, in fact, resulted from the improved natural history investigations; for it is impossible to read many recent authors without observing that the fact of the localized distribution of some varieties of worms—the more or less marked cir-

[a] Krankheiten des Nervenapparates, in Virchow's Handbuch, &c.

cumscription of some of them to particular ages, and the striking frequency of parasites, both entozoal and ectozoal, among numerous classes of the animal kingdom, have tended to induce them to consider these animals as natural to such beings.—Nay, a final cause for their existence has been discovered in their power to reconvert dead and dying matters into living structures—a speculation which can be only characterized as ingenious. These distinguished writers have, however, made a no uncommon mistake in confounding two words of very different signification. A worm, like a disease, may be *peculiar* to a given animal without being *natural* to it. That we must die, is a law of Nature. Any one disease may curtail our life. No one disease, however, is natural to man, though there are several peculiar to him, which attack his existence when his body has been exposed to the required conditions of their development. Among these must be placed the verminous malady.

All recent writers express their surprise that the elaborate apparatus of generation and reproduction among entozoa did not suffice to warn their predecessors of the improbability of the hypothesis of equivocal generation. It may well be so; but I experience a similar surprise that the frequency of the coexistence and of the alternation of several distinct varieties of worms in the same individual, as abundantly shown in my cases, has not strongly directed these writers to the recognition of the great fact that the life of these animals is subordinate to particular conditions of the individual infested by them,—that their natural history, habitat, development, and decay, are in strict relation to special states of that individual. If a tænia lata chooses to infest the intestines of the Swiss, and a tænia solium displays an equal partiality for an English or French system, these worms, at any rate, manifest a marked partiality in their advances, and are liable to be accompanied in either case by such very distant relations, as the ascaris lumbricoides and vermicularis, that we can see no other possible bond of union between the intruders but a common desire and aptitude to live, under certain particular conditions, at the expense of their host.

When we come to analyze the phenomenology of worms, we are met at the outset with a declaration in numerous quarters that the passage of the worm outside the body is the only certain basis of diagnosis. This may be admitted to be true, and yet not allowed to obstruct other inquiries. Here, too, I remark a confusion in the statements of many writers, who ignore, more or less completely, the value of a particular col-

location of symptoms, because a disease is not absolutely characterized by them. But in other branches of medicine, such a mode of exposition would be fraught with danger. When a patient complains to us of loss of power in his muscles, numb feelings in various parts of his body, occasional uneasy, twisting sensations in his abdomen, headach; and when we observe, moreover, that his worn, pale face indicates some profound disturbance in the system, we are led to examine the gums: we find a blue line round their border: we examine the water or the cider he is in the habit of drinking, and we find distinct traces of lead impregnation. But, surely the discovery of these two latter positive indices of saturnine intoxication should not militate against the due estimation of the former array of symptoms, which guided our further inquiries, and brought about an exact diagnosis. It will be very long before physicians examine the gums of every patient submitted to them, and still longer before they subject his ingesta and egesta to chemical examination; and unless we are directed to such and similar investigations by a sagacious appreciation of the less characteristic signs, we shall flounder in error, and overlook the most important disorders. Here, what is necessary is not to expect a pathognomonic sign, but to suspect—to guess, on uncertain, but valuable data. Every one knows the value of a blue line round the gums, when he has found it out. But it is not given to every one to imagine the presence of lead from such and such derangements of the economy. In the great majority of medical cases, a diagnosis is easy, if the thing to be diagnosed is suspected. Physicians differ from each other not so much in what they know, as in what they believe to exist.

Now, I venture to think that there is an arrangement of symptoms in most cases of worms, and more especially in tapeworm, which ought to direct us to the question, Has the patient worms? and, failing a satisfactory reply to this question, should compel us to take the requisite means to arrive at one. I have too often given evidence of my views on this matter in the course of this paper, to render it now necessary to make a detailed exposition of all the symptoms which more or less cogently suggest to the mind the presence of worms, and the fifty cases I have reported are sufficiently explicit as regards my main object. Those who pay an exclusive attention to the digestive disturbances, to the itching of the nose and anus, the foul breath, the varying appetite, will be often right in their diagnostic efforts, whether affirmative or negative, when they have to deal with infantile life, or with the

round and thread-worm; but will be very rarely, indeed, led to a sound conclusion, when their inquiries refer to adult life and to the tape-worm; and this, too, whether in the affirmative or the negative direction. For such troubles are frequently but little marked in tape-worm, and, when present, are wanting in value unless associated with other phenomena. It is in disturbances of the nervous system, associated with these, that we find the best basis for a provisional diagnosis of tænia. When such disturbances, amounting often to convulsive movements of an epileptic form or hysterical character, especially when occurring in a man, coexist with signs of an abdominal disorder, as precisely laid down by Dr. Wood, the possible existence of the worm should be suspected. With this, in the main, Bamberger seems to agree. It should never be forgotten, that in the vast majority of cases of disease which come before us, cerebral disturbances are merely sympathetic[a]; and if these should be well marked, without fever, and with ill-defined, irregular, and alternating digestive troubles, the observer is bound to suspect a foreign body in the intestinal canal, and most probably a parasite.

I have had occasion often to allude to tremors, as occurring in tænia, and have marked the absence of mention of this symptom on the part of almost every author, including the eminently practical Heberden. This could have arisen only from the notion that the symptom is unimportant among so many more obtrusive nervous aberrations. But its frequency is note-worthy, and, in this aspect, deserves to be placed after headach, giddiness, and accidents in the special senses. There is, however, another highly important reason for bestowing a peculiar attention upon the symptom. Tremor is a less common sign in all diseases than cephalalgia or giddiness. It is more frequently connected with a definite pathological basis, and apart from such basis rarely makes its appearance. Now,

[a] Chomel has so wisely alluded to the point that I cannot refrain from quoting his remarks:—"We must first observe, in a general manner, that the two organs which are most ordinarily the seat of sympathetic phenomena are, less often than the other important viscera, the seat of the disease itself. Thus the disorders that we observe in the functions of the brain and of the heart, as cephalalgia, delirium, convulsions even, acceleration of the course of the blood, palpitations, syncope, have, in the great majority of cases, particularly in acute affections, their point of departure elsewhere than in the brain and heart. The great disturbances which supervene in the digestive and respiratory passages are, on the contrary, most commonly connected with diseases of these organs, or of the parts which concur with them in the accomplishment of the same functions. Thus, when I see a patient the subject of delirium, convulsions, a severe cephalalgia, I am induced to seek for their cause in distant organs before questioning the brain; as, in intense fever, I am led first to search its point of departure anywhere else than in the heart."—*Eléments de Pathologie Générale*, p. 484. Par M. Chomel. Fourth Edition. Paris, 1856.

if a patient has not recently suffered from a severe or exhausting malady, is not obviously affected with some metallic poison, shows no other indication of general paralysis, or paralysis agitans; and if, moreover, he is not extravagantly addicted to alcohol or tobacco, we ought to look with great suspicion upon marked trembling of the limbs as probably indicative of worms in the intestinal canal. The semeiological value of this condition is enhanced by the circumstance that it is an objective state, one that cannot be concealed, and which, if simulated, could only deceive the ignorant. I now, in conclusion, place before the reader, in a summary manner, the conclusions at which I have arrived, and which appear to me fairly drawn from my cases.

1. That, in the great majority of cases of tape-worm, and, though with lesser frequency, in cases of other intestinal worms, more or less serious and peculiar nervous disturbances are apt to arise.

2. That the most frequent of these are headach, giddiness, various troubles of the special senses, especially singing in the ears, flashes and dark spots before the eyes, imperfect amaurosis, and trembling of the limbs.

3. That various anæsthetic, and, on the contrary, neuralgic phenomena, are very frequent, usually connected with general lassitude and sense of muscular feebleness.

4. That, though less frequent than those previously cited, convulsive seizures, partaking of the nature of epilepsy or acute eclampsia, or sudden attacks of insensibility, mixed with syncope[a], and, in the female sex, severe forms of hysteria, are also often directly traceable to worms.

5. That the last symptoms (No. 4) are more common in childhood, and the earlier periods of life, than afterwards; and are more frequently caused by the round and thread-worm than by the tape-worm.

6. That chorea does not appear to be often excited by the irritation of worms.

7. That a feeble state of the general health generally accompanies the presence of worms; often, in cases of tænia, proceeding to marked anemia, so as even to lead to the suspicion of the possible existence of Bright's disease.

8. That the irritation phenomena of the digestive tube, even when associated with various symptoms referred to the functions of that tract, do not warrant the diagnosis of the pre-

[a] In his chapter on Lipothymia, Heberden says that "defectio animæ sæpe accedit lumbricis in puerili ætate."

sence of tænia; and that their absence does not absolutely indicate the absence of the parasite.

9. That the frequent appearance of the nervous symptoms above related[a], without a well-marked relation to any special lesion of the nervous system, especially if alternating with periods of perfect or nearly perfect freedom, should engender the suspicion that worms are present. If to those symptoms are added various ill-defined disturbances of the functions of assimilation, including occasional colicky pains, without marked vomiting, pain after food, or decided emaciation,—it is in the highest degree probable that worms are the source of the symptoms, and steps should be taken to obtain assurance of their existence, or the contrary.

10. That it is probable that many of the sympathetic phenomena of vermination are connected, not with their direct irritation of the mucous membrane, with which they are in relation, but with a general disorder of the system, partly resulting from the parasites, and partly the cause of their maintenance and development in the intestinal tract.

Art. VII.—*On the Physiology of Diabetic Sugar in the Animal Economy.*

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Since Professor Bernard, rather more than ten years ago, announced that the liver possessed a sugar-forming function, no subject in physiology has received a more careful examination than that of glucogenesis. In Germany, France, America, as well as in these islands, a multitude of investigators have toiled in this newly-opened gold-field of science, and have brought to light many important facts.

The aspect of the question is now, however, undergoing a change, for recent observations show that there is reason to doubt the truth of Bernard's discovery, which for a time seemed supported by such unequivocal evidence that it had been received as an established physiological fact.

It is proposed in the following paper to endeavour to give a simple, and, at the same time, faithful account of the history

[a] I have left out of enumeration the dilatation of the pupil, as my own observations have not enabled me to speak decidedly of this symptom. But it should be remembered that many judicious authors include this among the symptoms of worms, though denied by Louis in reference to tænia.

and present condition of our knowledge of the origin of sugar, and the changes it is liable to, in the animal economy.

It may be urged by some that details are here entered upon of a too elementary nature, and that facts are cited, and experiments enumerated, which are no longer new to the scientific world. To such it must be answered that this communication is not intended for the perusal of those who have kept pace with the progress of physiological investigation on this subject, but rather of those whose multifarious professional occupations prevent them from searching out for themselves from the immense mass of material which has, during the last few years, accumulated upon this subject, what is substantially true and what is incorrect. Starting then with the simplest facts, it shall be my aim to indicate what accurate information we have on this important subject, and to show, without entering into controversy, how far the careful observations of independent inquirers has yet reached in establishing new truths with reference to sugar in the animal economy.

Some readers will, perhaps, not deem it superfluous if, before entering more directly upon the subject, a few remarks are premised upon the varieties of sugar met with in the organic structures, and the most convenient tests for the detection of sugar in organic solutions.

In the vegetable kingdom several kinds of sugar exist; of these, grape-sugar is, so far as elementary analysis is concerned, identical with diabetic sugar. In animals two varieties only are found—*diabetic sugar and sugar of milk.*

The latter, known also as *lactine*, *lactose*, *salt of milk*, is an essential ingredient in the milk of all mammalia, but is not met with in any other secretion; it readily undergoes change into lactic acid, and, either in the digestive process by passing through the liver, or by the action of dilute acids, is transformed into diabetic sugar.

Diabetic sugar, equally well-known as *glucose*, *grape-sugar*, *sugar of urine*, *liver sugar*(?), *sugar of starch*, *fruit sugar*, is found to exist normally in the animal economy, and in certain morbid conditions makes its appearance in considerable quantities in some excretions. Every one knows that the most striking feature of the formidable disease, diabetes, is the existence of a large quantity of this sugar in the urine; and the same material has been found in the serum of blisters, the sweat, the pericardial serum, &c., of diabetic patients.

The attention of physiological chemists has of late years been so much directed to the "sugar question," that, as a natural result, a considerable variety of tests has been devised for

the detection of saccharine matter in organic solutions. For the benefit of any one wishing to try the various merits of each test alluded to, reference is made to the publication, in which it will be found more fully described. The liquor potassæ test of Moore[a]; the chloride of tin test of Maumené[b]; Boettgers[c] subnitrate of bismuth test, and Loewenthal's test-solution formed with protochloride of iron, may each and all have especial advantages, but by much the greater number of test solutions selected by chemists for the ready detection of glucose belong to the class known as *cupro-potassic tests.*

To this category belong Trommer's, Kletzinsky's[d], Capezzuoli's[e], Donaldson's, Barreswils[f], Fehlings[g], &c., of which, as they will be constantly referred to in the following pages, the two latter may be spoken of at greater length. Besides these, the all important test by fermentation, and the beautiful method of optical analysis devised by M. Biot, and depending upon the action of a liquid containing sugar upon polarized light, deserve special notice.

The test solutions of Barreswil and Fehling are very similar to each other, and are for ordinary purposes the most ready and convenient mode of detecting the presence of diabetic sugar; they have the great merit of not only indicating its presence, but, by a little care, of showing with considerable accuracy the amount of glucose contained in a given quantity of a saccharine solution. Certain precautions, however, are necessary in the use of these test solutions, for, if kept for a considerable period, these liquids undergo a change which causes them alone to yield a precipitate on boiling; it is well, therefore, occasionally to test whichever is employed by boiling it, and so prove that it has not undergone the peculiar change which, causing itself on being boiled alone to yield a copper oxide, would occasion the mistake of supposing sugar to exist in a solution where it was not really present. When the fluid to be tested contains blood, albumen, colouring matter, or any organic constituent of the body, which might interfere with the action of the copper test, such materials are best got rid of

[a] Lancet, p. 751. September, 1844.

[b] Archives Générales de Médécine, vol. xxii., p. 494. 1850.

[c] Zeitschrift der k. k. Gesellschaft der Aerzte zu Wien, September 20, 1858; and Journal de Physiologie, vol. ii., p. 145.

[d] Dublin Quarterly Journal of Medical Science, p. 93. August, 1855.

[e] Journal de Chimie Médicale, p. 359. 1844.

[f] Traité de Chimie Anat. et Physiol., par Ch. Robin et F. Verdeil, vol. ii., p. 570; and Journal de Chimie Médicale, p. 641. 1851.

[g] Leçons de Physiologie Experimentale, par M. Claude Bernard, troisième leçon, p. 49. Cours des Semestre d'Hiver, 1854–5.

by mixing the fluid with animal charcoal, and filtering. Animal charcoal is unquestionably a better means for effecting this object than either acetic acid, or crystallized sulphate of soda, all albuminoid matters, colouring matter of the blood, uric acid, &c., being completely retained on the filter by its aid, and the clear liquid thus obtained being equally suited for either the cupro-potassic or optical tests. Although these test solutions are to be regarded as very valuable, giving indications in general very accurate and delicate, especially when combined with the use of animal charcoal, yet it must be remembered that this reaction does not give an absolute certainty of the existence of sugar; glycerine, tannin, cellulose, chloroform, &c., may produce various degrees of a reaction similar to glucose. Hence the necessity of not relying solely on any cupro-potassic test.

Barreswil's Solution.

	Grammes.	Grains.
Cream of tartar, ...	50 =	771·7
Carbonate of soda, ...	40 =	617·36
Sulphate of copper, ...	30 =	463·02
Potassa cum calce, ...	40 =	617·36
Distilled water, enough to make the whole when dissolved measure one litre (1·76 imp. pint.).		

One hundred cubic centimetres (28 fluid drachms) of this solution are exactly discoloured by one gramme (15·434 grains) of glucose.

Fehling's Solution.

	Grammes.	Grains.
Sulphate of copper, ...	40 =	617·36
Concentrated solution of tartrate of potass, ...	160 =	2469·44
Ley of soda, of specific gravity 1012,	560 =	8643·04
Distilled water, enough to make the whole measure one litre (1·76 imp. pint).		

Ten cubic centimetres (2·8 fluid drachms) of this liquid are precipitated completely by 11·5 cubic centimetres (3·2 fluid drachms) of a solution containing 5 per cent. of glucose.

If either of these reagents be added to a solution containing diabetic sugar in sufficient quantity to produce a decided blue coloration, and the solution be then boiled, the liquid loses its transparency, passes through different shades of green, yellow, &c., and finally deposits a reddish precipitate of protoxide of copper. According, however, as either the sugar or

the re-agent predominates, every intermediate shade of colour, green, yellow, red, &c., may result, but it is the reduction of the metallic oxide, not the precise tinge of colour, which is the important character.

Fermentation Test.—This test, which, as every student knows, acts by causing sugar to undergo vinous fermentation, whereby it is converted into alcohol and carbonic acid, is attended with more certainty than any other. As each equivalent of sugar gives rise to the formation of two equivalents of alcohol, four of carbonic acid, and two of water, it is possible, by estimating the amount of carbonic acid formed, to make use of this as a quantitative as well as a qualitative test for sugar. It is true that it requires a longer time for its reaction to take place than the others, but, on the other hand, it is not interfered with by the presence of those colouring matters, &c., which must be got rid of before the employment of the cupro-potassic reagents.

It is unnecessary to dwell upon the details of this method[a] of detecting the presence of sugar, which are to be found in every hand-book on this subject; but it should not be forgotten that this test does not yield such *infallible indications* as some physiologists would have us believe. Although we are told that the property of fermenting characterizes sugar, inasmuch as sugar is defined as a substance which undergoes alcoholic fermentation, yet it has been recently shown by a chemist of rapidly rising reputation, M. Berthelot,[b] that glycerine, mannite, dulcine, sorbine (substances having many properties of importance in common with sugars, yet not considered identical with them) are also capable of undergoing alcoholic fermentation in the presence of yeast. The yeast used in these experiments should be well washed, so as to be carefully freed from traces of sugar or fecula, and, to avoid error, a comparative experiment should be made with pure water in a tube similar to, and in like circumstances with that in which the liquid being tested is placed.

The method of optical analysis of solutions containing sugar gives evidence of extreme delicacy, for polarized light makes known differences in sugars when chemical analysis fails to detect any. The sugar of fruits causes a deviation of the plane of polarization to the left, while diabetic sugar causes

[a] The directions given by F. W. Pavy, M. B., in his paper on Saccharine Matter, &c., Guy's Hospital Reports, vol. viii., p. 321, in reference to this method, are clear, simple, and practical.

[b] M. Berthelot, sur la Fermentation Alcoolique, Annales de Chimie et de Physique, 3e Serie. 1857.

a deviation to the right. The sugar known to exist in the fluid of the allantois, causes polarized light to deviate to the left like cane-sugar, yet has the other properties of glucose: it ferments easily, turns brown with potash, and reduces the salts of copper.

Although it has been long known (since in 1677 Thomas Willis first indicated the fact) that in certain morbid conditions the urine and other secretions contain sugar, it is only in comparatively recent days that the normal existence of this substance in the animal economy has been pointed out. Since the investigations of Professor Bernard, presently to be detailed, have drawn much attention to the subject, diabetic sugar has been more carefully sought for in the healthy secretions, and has been found existing normally, or at least upon slight disturbances of health, where it was not formerly at all supposed to exist.

Furthermore, it has been discovered that injuries and excitations of parts and organs not hitherto looked upon as immediately connected with diabetes, may give rise to this complaint in a more or less permanent form. To the mind of the scientific physician nothing is more pleasing or more full of practical importance than the study of those conditions where, so to speak, health and disease meet,—where the normal state approaches to, and slight deviations from the normal state give rise to, symptoms which, when exaggerated, constitute formidable disease. Here it is his province to search for the beginnings of disease,—to seek for the early commencement of maladies at first remediable, but at a later period hopeless. Hence the necessity of looking carefully to the presence of sugar in the excretions of health, and hence the value of the experiments which show under what various circumstances the diabetic condition may exist.

Independently of the supposed sugar-forming function of the liver, glucose is found in the blood of animals fed on amylaceous diet; and, according to the experiments of Berard and others on animals fed on meat, sugar formed, as he conceives, during the digestive process enters the animal organism through the absorbents and thoracic duct. It is true that the existence of sugar in the fluid contained in the thoracic duct of a meat-fed animal may be accounted for by some as being derived from the lymphatics of the liver; but Berard has proved the existence of sugar in the lacteals of the mesentery before joining with those coming from the liver. The analysis of Bernard himself and Lehmann prove that the blood may contain sugar even during perfect health; and if the quantity amount to anything

considerable, the kidneys, more promptly than any other glands, undertake its elimination. We are told—but unfortunately these facts are not supported by the corroborative testimony of all observers,—that the urine contains sugar during fœtal[a] life; that in old age also the urine becomes saccharine; and that in women[b] nursing, or during the later stages of pregnancy, a notable amount of sugar is to be found in the urine. Professor Brücke, indeed, goes further with reference to the existence of sugar normally in the renal secretion. He says, that up to the present time sugar has been sought for in the urine as the symptom of a grave malady. Now, on the contrary, this principle is found to form an element of normal urine. He has published a memoir, in which he has announced the discovery that the presence of sugar is constant in the urine of man in the healthy state[c].

Dr. Hammond[d] has found sugar in his own urine after living for six days exclusively upon starch; but it can hardly be said that this is a normal presence of sugar, nor yet is it the result of disease, although it must be admitted that one could not determine whether the saccharine urine may be the result of the starch diet simply, or of the dyspepsia which resulted from six days of such diet. That disordered digestion is not unfrequently followed by transient diabetes, is well known. So full of interest do these cases of transient diabetes seem, that I cannot refrain from giving Dr. Harley's account of his observations made upon himself, which are both instructive and amusing:—"About five years ago," he says, "at a time when I was much occupied in studying the physiology of diabetes, I regularly tested my urine twice a day, and on one occasion I found it to contain a small quantity of sugar. On the day in question I had partaken freely of asparagus salad, and, thinking that this might perhaps be the cause of the presence of sugar, I determined to try the effects of a greater quantity. The following day, the sugar having entirely disappeared from the urine, I again partook of the same salad both in the morning and afternoon. In the evening, on testing the urine, I found very distinct indications of sugar. As the observation was to me one of great interest, I determined to make some further experi-

[a] Compare Dr. W. D. Moore on the Existence of Sugar in the Urine of the Fœtus, No. 39 of this Journal, August, 1855; and Bernard, Leçons de Physiologie Exper., p. 393. 1855.

[b] Compare the statements of Th. Kirsten of Leipzig, Schmidt's Jahrbuch, vol. xcvi., p. 185; H. Blot, Gaz. Hebd., vol. iii., p. 41, 1856; and E. Wiederhold and Leconte, Schmidt's Jahrbücher, vol. xcvii., p. 14.

[c] Brücke, Journal de Physiologie, vol. ii., p. 338. 1859.

[d] Transactions of the American Medical Association, 1857.

ments on the subject, in order to discover how many hours this state of saccharine urine would continue. During two days I ate large quantities of the asparagus salad, taking care to have it made as stimulating as possible with vinegar and pepper. The result was far beyond my expectations; for, instead of the sugar disappearing from the urine in a few hours after I had ceased partaking of the diet in question, it continued to be secreted during several days, until I at last became very much alarmed lest the disease had been permanently induced. On the evening of the fourth day the sugar had almost entirely disappeared; but on the fifth it returned in increased quantity, so much so, that a drop falling on the boot left a distinct white spot. I could not account for the recurrence of the disease, as I had been particularly careful in my diet during the two previous days. I have mentioned," continues Dr. Harley, "this experiment, because it appears to me that if a flow of saccharine urine be induced in a healthy person—as I consider myself to be—by disordering the digestion and over-exciting the liver, it is very probable that a cause, insignificant in itself, but operating upon a predisposed constitution, might tend to produce the disease"[a].

Sugar in the urine has been found after eating cheese and other substances of difficult digestion. It is worthy of remark that Dr. Jesson, of Dorpat, has rendered horses diabetic by feeding them with hay damaged by moisture. The writer of this Paper has found sugar in abundance in the urine of brewers' horses fed upon "the grains" in the brewery to which they belonged. M. Reynoso has observed sugar in the urine as a result of the internal administration of lead, arsenic, and sulphate of quina; and Leconte, after giving dogs nitrate of uranium, found them diabetic.

Physiological experiment has shown that in animals the diabetic condition may be created by injuring or exciting organs, which might at first seem to be but remotely related to each other. Of these experiments, perhaps the most remarkable is that of Bernard, whereby a puncture made in the middle line of the floor of the fourth ventricle is followed by a flow of saccharine urine.

For the performance of this experiment, it is necessary to perforate the occipital bone with an instrument suited for the purpose, a little posterior to or below its tubercle. The cavity of the cranium having been entered, the animal being now

[a] Harley on the Physiology of Saccharine Urine, British and Foreign Medico-Chirurgical Review, p. 199. July, 1857.

fixed in an exceedingly steady position, the instrument is to be pushed onwards in a direction downwards and slightly forwards, until the basilar bone meets its point; it is then carefully withdrawn in the same direction in which it entered. In this operation the cranium, the cerebellum, and the medulla oblongata are successively pierced; when successfully performed upon a healthy and vigorous animal, the urine is found in a short time after to be strongly impregnated with saccharine matter. The presence of sugar may be detected in an hour, or an hour and a half after the puncture has been made, and may last for a period varying from some hours to some days.

The precise space on the floor of the fourth ventricle where the puncture must be made, in order to produce artificial diabetes, is exceedingly limited; according to Bernard[a], when the puncture is made in the middle line of the floor of the fourth ventricle, exactly in the centre of the space comprised between the origins of the acoustic and pneumogastric nerves, there is an increase of both the hepatic and renal secretions at the same time; if the puncture be a little higher up, there is very often merely an augmentation of the quantity of urine (polyuria without diabetes); if a little below the point indicated, the passage of sugar alone is observed, the urine continuing scanty (diabetes without polyuria).

The mode of producing glucosuria in an animal poisoned with *curara* is, Bernard conceives, explicable by the action of this poison upon the nervous system. Curara is a substance used by the savages of South America to poison their arrows, and has the remarkable property of completely annihilating the functions of the cerebro-spinal nervous system. Although in the present state of our knowledge upon this subject, it may be difficult to give an unhesitating assent to Bernard's explanation of the fact, yet the experiment upon which the fact is based is of a nature so striking that it is given in Bernard's own words:—"We introduced under the skin of the back of a large dog, at the commencement of the digestion, a certain quantity of curara in solution; at the end of twelve minutes the effect of this substance was manifest, and respiration was arrested; artificial respiration was then practised for two hours and a-half, with precaution, and only stopping for half a minute now and then; during this time the circulation continued perfectly right; the blood was black in the veins, in the arteries, arterial red; but it became black everywhere when insufflation ceased. During all this time there was abundant secre-

[a] Leçons de Physiologie Experimentale, p. 339. 1855.

tion of tears and saliva. A wound, which had been made some days previously, in order to collect the pancreatic fluid, and which was beginning to cicatrize, gave exit to an abundant serosity. The urine was examined, on different occasions, without sugar being found there; after two hours and a half it was proved to be present in large quantities. The proportion of the urine was increased, and the muscular contractility was much exaggerated; violent contractions resulted from touching a muscle with the point of a bistoury."

Artificial diabetes may be produced by other means than giving rise to lesions of the nervous system, either by mechanical injury or the action of poisons directly affecting the nervous centres; it may arise from injury or irritation of the liver. Persons have been known to become diabetic from contusions in the region of the liver; and a case has been cited in which an individual who had received a kick from a horse in the right hypochondrium, had, in consequence, saccharine urine, a symptom which disappeared when he recovered from the contusion. Some of the most valuable results which have been obtained in this direction, we owe to Dr. George Harley, of University College. So long ago as during the summer of 1853, he communicated to the Société de Biologie of Paris, the discovery of a new mode of producing diabetes artificially in animals, by means of stimulants introduced into the portal circulation. He has since repeated and extended his experiments, which have been confirmed and somewhat modified by Bernard. Alcohol, ether, chloroform, methylated spirit, or ammonia injected into the portal vein, give rise to the secretion of saccharine urine. Into the portal vein of a good-sized dog in full digestion, Harley injected fifteen drops of liquor ammoniæ, diluted with forty cubic centimetres of water. In twenty-four hours afterwards, on the animal being killed, his bladder was found enormously distended with urine, which not only reduced the copper in the liquid of Barreswil, but fermented most rapidly. It is not necessary that these stimulants should be introduced directly into the circulation by injection into the vena porta to excite diabetes; the same effect is known to result from the injection of stimulants into the intestine simply, and from this experiment we can readily understand how diabetes mellitus may be produced by the abuse of alcoholic drinks in persons predisposed to the disease.

Another mode of causing artificial diabetes has been pointed out by M. Reynoso, which consists in disturbing the function of the lungs by causing an animal to breathe irritating or stimulating vapours; thus temporary glucosuria is consequent

upon the prolonged inhalation of ether or chloroform. In order, however, to induce a flow of saccharine urine, the inhalation must be kept up for a considerable time; and in testing the urine in this, as in other experiments where chloroform is used, it must be remembered that this substance causes the reduction of the metallic oxide in the cupro-potassic solutions; and that, consequently, it is the test by fermentation upon which the experimenter must rely. It must be enough at the present time to state that the repetition of the experiments here given as to the methods of inducing artificial diabetes, by many independent and careful investigators, leaves little or no doubt as to the truth of the facts; but the theories which have been broached, and the hypotheses which have been founded upon these experiments, are as numerous as the individual observers. An analysis of such theoretic views would be out of place.

Let us now consider the question, Does the sugar which is found in certain conditions in the excretions, in various organs, in the blood, &c., come into the animal organization from without? or are there organs in the animal body which can fabricate sugar, no matter what may be the nature of the aliment supplied?

It is not my intention to answer this question, but merely to bring forward what may be regarded as truthful evidence *pro* and *con*. In truth, Bernard's announcement—that nature, not being willing to intrust the animal creation to an alimentation often depending upon accidental circumstances, had placed within the bodies of animals an organ, the liver, which is capable of making sugar from blood—has, since it was first promulgated in 1848, up to the present time, given rise to constant discussion, which seems far from being yet terminated. It has been said already that Bernard's doctrine seemed based upon such unequivocal evidence, the so-called sugar-forming function of the liver has been received and recorded in many of the best hand-books of physiology as an established fact. The acceptation of it, however, was not universal. In 1855, in the "Comptes Rendus" of the Parisian Academy of Sciences, Bernard replies to an attack of M. Figuier, who denied that animals possessed the power of forming sugar, and referred that found in the liver of carnivorous animals to an external source. M. Sanson[a] has upon the same subject ventured to differ from the learned academician, and so lately as last year states his conviction (based upon experimental proof)

[a] De l'Origine du Sucre dans l'Économie Animale, Journal de Physiologie, vol. i. 1858.

that there is but one source of sugar in the animal economy, and that this source is external; and he conceives that carnivorous animals find in the tissues of the vegetable feeders upon which they live the dextrine which is the primitive material from which is formed the sugar necessary for the performance of their functions.

The objections urged against Bernard's views have been made the subject of special investigation by the French Academy; and although the commissioners conceived that M. Figuier[a] had based his arguments on grounds that were untenable, and M. Sanson failed to make good his statement: the question, nevertheless, cannot be regarded as settled, nor can it be said that unanimity of opinion prevails with regard to its details.

Among the researches which cast doubt upon the sugar-forming power of the liver, those of Dr. Pavy[b] unquestionably stand foremost, and are entitled to the fullest consideration. In his communication in Guy's Hospital Reports of last year he tells us that, from a consideration of all the facts brought forward, which in every respect, to the fullest extent, corroborate each other, and which stand uncontroverted by any single result he has yet encountered—he thinks we are unavoidably led to deny to the liver that sugar-forming function, with which, in recent days, it has been endowed by physiologists. In whatever manner subsequent discoveries may solve the difficult problems connected with this question; whether or not it shall hereafter be clearly shown that Bernard was in error in supposing that the tissue of the liver is actually endowed with the power of producing sugar: it must never be forgotten how much is due to the genius of this great experimental inquirer; how many new facts his spirit of physiological research has elicited; how many truths are now to be regarded as permanent scientific acquisitions, which, but for him, would still lie hidden. The vigour of his intellect, the zeal of his pursuit of scientific knowledge, his indefatigable earnestness, his accuracy of observation, have opened so vast a field of inquiry, and have afforded such abundant material for investigation, that to him in justice must be attributed such acquisitions to knowledge as have been evolved from the intellectual fermentation excited by the novelty of his ideas and the originality of his experiments. In fact, to read his own words and follow his own

[a] Comptes Rendus de l'Académie des Sciences, Juin, 1855.

[b] The alleged Sugar-forming Function of the Liver: Guy's Hospital Reports, 1858.

reasonings upon his "Nouvelle Fonction du Foie"[a], points out the necessity of putting in no other language than his own the details of his researches, with such clearness and simplicity are they given.

In the year 1843 the following facts became for Professor Bernard an object of physiological investigation. The strange affection known as diabetes mellitus is characterized by the appearance of a superabundance of sugar in the organism, to such a degree that the blood is surcharged with it; all the tissues are impregnated, and the urine especially contains it, sometimes in enormous quantities. Yet, constantly in such cases, and particularly when the disease is intense, the quantity of sugar expelled by the diabetic patient is quite above that which could be furnished by the feculent or saccharine substances which compose his diet, and the presence of saccharine matter in the blood and its expulsion by the urine are never completely arrested, even at a time when there is absolute suppression of saccharine or feculent aliment.

It was after an attentive examination of these circumstances, observed in diabetic patients, and which are known to all physicians, "that," says Bernard, "I was led to think that there might be in the animal organism phenomena still unknown to chemists and physiologists, capable of giving birth to sugar from other sources than substances containing fecula." Thus led to engage in a series of experiments, Bernard was at first surprised at the unexpected results which he obtained. An adult dog, in vigorous health, was fed during seven days exclusively on meat, of which he ate *à discretion;* at the end of this time he was sacrificed by pithing, while the digestive process was going on. The blood of the hepatic veins was collected in order to search therein for saccharine matter, and great was the surprise of the experimenter when he proved, very readily, and in a manner admitting of no doubt, that there existed a considerable quantity of sugar in the blood, which was going out of the liver of a dog, which, by the fact of his exclusively meat-diet, had been deprived of sugar during seven days. This result was too unexpected and too important to be accepted without scruple. Repetition of the experiment was the only way of removing doubts, and this was done with similar results, and has been done since with like result, by the most skilful physiological experimenters in the New and in the Old World.

[a] Nouvelle Fonction du Foie consideré comme Organe Producteur de Matière Sucrée chez l'Homme et les Animaux : Paris, 1853.

No doubt whatever now exists as to the fact that in animals fed exclusively upon meat for a period even of many weeks, when killed promptly by section of the medulla oblongata, no sugar is found in the blood *entering* the liver by the vena porta, while sugar does exist in the blood *leaving* the liver by the hepatic veins; but this fact has been variously explained by different investigators. M. Figuier has at least the merit of showing that further researches were required regarding the *new function* of Bernard, and the latter consequently engaged in new experimentation, which gave another aspect to glucogenesis. He submitted to careful washing the vessels of the liver of a healthy dog, which had been for some time fed on meat exclusively, and was killed by cutting the medulla oblongata. This was done by passing a stream of water through the liver, entering by the portal, and having exit by the hepatic veins, after traversing the organ. The washing was prolonged until the liquid discharged from the hepatic veins was no longer discoloured by blood, and did not give any evidence of containing either sugar or albumen. This object was accomplished in forty minutes, and then a small portion of the liver examined in the ordinary way was proved to be wholly free from sugar. Twenty-four hours later the fluid dribbling from the liver was found rich in sugar. From this experiment, Bernard concluded that the sugar is formed in the liver at the expense of a particular material by a kind of fermentation; in short, he came to the conclusion, that in the liver of an animal just killed there exists sugar, easily soluble and capable of being washed out of the hepatic tissue; but that there likewise exists in the liver-structure a less soluble material, which remains behind after washing, yet is easily convertible into sugar by the action of some ferment already formed in the liver. Advancing step by step, Bernard found that this material, which was slightly soluble in water, proved insoluble in alcohol, and he struck out the following mode of showing its presence:—The fresh and yet warm liver of a recently killed animal was cut into slices, washed, and then pressed through a hair sieve. The pulp thus obtained was treated with alcohol, until all sugar was removed, and then dried. This pulverized mass, if mixed with water at the ordinary temperature, and let stand for a time, gave evidence of sugar; but, if similarly treated with hot water, and allowed to stand for even a longer time, no trace of sugar made its appearance. Bernard was thus led to surmise that there existed in the liver a substance analogous to amylum, and this substance, he and Hensen, about the same time, succeeded in obtaining

in the pure state. Bernard named it glucogenic substance. Since its discovery it has received a multitude of names, each author conceiving that his own name possessed peculiar merits. It has been called by Hensen, *sugar-forming substance;* by Nape, *amylum;* by Schiff, *liver-starch;* by Pavy, *hepatine;* by others, *glucogene* or *amyloid substance*. If I may venture to offer an opinion upon the subject, I should suggest that the last name be that generally adopted, for, although resembling starch, it is not identical with it. Moreover, in naming a newly discovered substance, probably of high import in the economy, it is not well to involve in that name any theory with regard to its use or function; and, further, it appears from the researches of microscopists of high repute, that a material allied to, if not identical with that in question, is not confined to one organ, the liver, nor one function, that of making glucose; hence the necessity for a name embracing a wide generalization. M. Sanson[a] still insists, and his assertion receives some support from the report of M. Poggiale[b], that "glucogenic matter is met with in all the tissues of herbivorous animals." Bernard, who had already pointed out the presence of a sort of "animal fecula or glucogenic matter" in the muscles and lungs of the fœtus[c], has recently shown that it exists at a particular period in the placenta, and has even given a drawing of the microscopic appearance of the filiform papilla from the amnion of the calf, showing the cells filled with "amylaceous matter;" while M. Rouget[d], in a communication of great value, the first part of which only has as yet been made public, expresses the hope that in the subsequent part of his work he will be able to show that the presence of "amyloid substances," as a constituent part of the elements of normal tissues, is not limited to one single order of animals, nor to a single organ, the liver, among vertebrata, but is common to the elements of many organs; sometimes only during certain periods of their development; sometimes all through life, and plays a most important part in the definitive constitution of the tissues of a great number of the vertebrata.

Whatever name may be given to this substance, whether glucogene or amyloid matter, when obtained from the liver in the pure state, it is a whitish, tasteless, inodorous, neutral, non-

[a] Journal de la Physiologie, &c., p. 104. Janvier, 1859.

[b] Rapport de l'Académie de Médécine sur le Formation de la Matière Glycogene, Journal de la Physiologie, p. 549. 1858.

[c] Sur une nouvelle Fonction du Placenta, Journal de la Physiologie, &c., p. 31. 1859.

[d] Des Substances Amyloides, de leur Role dans la Constitution des Tissus des Animaux: same Journal, p. 85.

crystalline powder, insoluble in alcohol and acetic acids, but soluble in water. It gives with iodine a reaction resembling dextrine, sometimes resulting in a blue, sometimes a dark chestnut brown colour. It does not reduce the copper of the cupro-potassic liquid, nor does it ferment in presence of yeast; but if boiled with dilute mineral acids, or placed in contact with diastase, saliva, blood, pancreatic juice, it is quickly transformed into sugar, which both ferments and reduces Barreswil's solution. Its properties give it a place between starch and dextrine. Pelouze, by the action of fuming nitric acid, has transformed it into xyloidin, and gives for it the formula C_{12}, H_{12}, O_{12}. Injected into the veins of living animals, it is rapidly converted into sugar; and, being eliminated by the kidneys in this condition, gives rise for a time to strongly marked diabetes: and herein there is a prominent point of difference between amyloid substance and the material which it so closely resembles, dextrine,—for the latter remains in the blood for a long time unchanged. Alkalies interfere with and arrest the transformation of this substance into sugar when in contact with saliva, blood, &c.,—a property which will subsequently be seen to be of much practical importance; for by its help the change of this substance into sugar can be promptly arrested by injecting a strong solution of potash through the liver soon after death.

It is of consequence to know what may be the readiest and best means of obtaining the amyloid substance of the liver. Bernard[a] has indicated, in his first memoir upon the subject, the following proceeding for the extraction of "glucogenic matter:"—The liver is to be divided into very thin slices, and immediately placed in boiling water, in order that the glucogenic matter may be prevented from undergoing change into glucose. The pieces of liver are next bruised in a mortar, and then boiled for about an hour, in a quantity of water sufficient to bathe the mass. This is expressed, and the expressed liquid filtered. The liquid thus obtained—which is of an opaline tint—is mixed with four or five times its volume of absolute alcohol, and there is immediately formed an abundant flaky precipitate, of a yellowish-white colour, which is collected upon a filter, and washed several times with alcohol. There is thus

[a] Gazette Médicale, March 28, 1857. It is but justice to state that Hensen, if not prior to, at least independently of Bernard, isolated the glucogenic substance of the liver: in December, 1856, he exhibited this substance before the Naturwissenschaftliche Gesellschaft at Wurzburg; and on the 1st of April, 1857, in Virchow and Hoppe's Pathological Institution. But the French physiologist has the advantage of having first published an account of it, and the manner in which it is to be obtained.

obtained an impure "glucogene," containing azotized matter. Its aqueous solution is coloured by iodine, but does not reduce the cupro-potassic solution, nor ferment in contact with yeast. To free it from the foreign matter which it contains, it is to be boiled for half an hour with a very concentrated solution of caustic potash, and, a little water being added, it is to be filtered. The solution must now be again precipitated by the addition of four or five volumes of alcohol. The deposit, again collected upon a filter, is submitted to repeated washing with alcohol, to remove the potash. The substance thus prepared contains a little carbonate of potash, which is not soluble in alcohol; it is, therefore, indispensable to redissolve the whole in water, saturate the carbonate of potash with acetic acid, and a third time precipitate with alcohol. The acetate of potash remains dissolved in the liquid; the "glucogene," then separated by filtration, is perfectly pure.

Such was the first procedure of M. Claude Bernard. Wishing, however, to shorten the process, as well as to use less energetic agents, he imagined a much more simple means of separating the "glucogenic matter." It consists in pouring a great quantity of crystallizable acetic acid upon a very concentrated and filtered decoction of the organ that one wishes to examine. At once a whitish precipitate separates, which is "glucogenic matter," for the albumenoid substances are soluble in acetic acid. When the organ examined contains no glucogene, acetic acid gives rise to no appreciable precipitate. This procedure possesses incontestable advantages; it readily, and in the space of a few minutes, discovers whether or not glucogenic substance is contained in any given tissue or organ. The acetic acid does not destroy the albumenoid substances, nor expose the experimenter to the risk of forming himself the very substance he seeks for. In this manner is obtained from the liver, in sufficient quantity for chemical examination and physiological experiment, amyloid substance of animal origin, closely similar to, if not exactly identical with, the amyloid substances thus designated by Virchow, and met with by him and others —Meckel among the number—in the parietes of the ventricles of the brain, in the prostate gland, in the degenerated walls of the small arteries of the spleen and intestine, in the liver, kidneys, and lymphatic glands; now also known to exist in the epithelial formation of the fœtus,—not only in the epithelia of its respiratory and digestive passages, but even in that of the skin and its appendages.

It may be, that some may say it is premature to speak of this material as of animal *origin*, yet it seems certain, that an

amyloid substance, having reactions analogous to and being nearly allied with cellulose, starch, and dextrine, is met with widely diffused through the animal organization; that this substance[a], having a particular constitution and special characters, establishes a sort of transition between nitrogenous and non-nitrogenous compounds; between the proximate principles of the animal and those of the vegetable tissues; and, finally, that it may be as justly regarded as having a truly animal origin as the fats and oils of the animal economy.

Yet it must be admitted, that both M. Figuier, and later, M. Sanson, have adduced some important experiments tending to prove that the glucose or the amyloid substance, from the transformation of which the glucose of the animal economy results, is of external origin. It is, no doubt, quite possible, that as the kidney is endowed with the power of laying hold of and eliminating from the blood at each round of the circulation, with inconceivable promptitude, the urea which exists in the blood in barely recognisable quantity, so the liver may be able to lay hold of and store up within itself the amyloid matters, which, in the case of carnivorous animals, can only be introduced into the circulation in the minutest quantities, through the medium of the amyloid substance known sometimes to exist in the tissues of the herbivora.

Without entering into the controversy as to whether it be the special attribute of the liver to form this substance, or to appropriate it when introduced into the system from without, it may be stated to be no longer a matter of doubt, that the hepatic organ during health contains a large quantity of it within its secreting cells. Knowing this, and remembering that extreme facility with which the amyloid substance of the liver is changed into sugar in the presence of blood, the question arises, Does this transformation occur in health and during life, while the circulating blood permeates the structure of the liver? or, is the sugar found in the blood of the hepatic veins in the *primary* experiment of Bernard, the result of post-mortem change? The amyloid substance of the liver being immediately after death transformed into sugar by contact with the blood, a transformation controlled, if not entirely prevented, by the presiding agency of the nervous system during life. The latter view is that taken by Dr. Pavy, and very ably advocated by him in his papers in Guy's Hospital Reports of last year. Deficient in many respects as I feel this communication to be, when I consider the vast amount of labour which has of late

[a] M. Rouget, des Substances Amyloïdes, *op. cit.*, p. 89.

years been bestowed upon the subject of which it treats; scanty as is the selection made from the abundant supplies of the literature of the subject, yet it would be indeed incomplete were I to pass over the researches of Pavy in silence. They are of a nature curiously interesting and instructive, and exhibit in their author not merely the patient spirit of inquiry after truth, but the all-important quality in a scientific investigator, that of readiness to resign a theory which had been at one time adopted, as soon as new facts are discovered, at first sight unimportant, but which observation shows to be inconsistent with the theory in question. Not to be led astray by foregone conclusions; not to be blinded by an hypothesis based upon even apparently sufficient data; nor too closely wedded to a theory from which it may become almost painful, if not impossible, to be disunited, are principles often with difficulty carried into practice.

I have myself verified most of the conclusions arrived at by Dr. Pavy in his paper "On the alleged Sugar-forming Function of the Liver," in Guy's Hospital Reports, 1858, and have repeated his experiments with various modifications. While, therefore, I offer my testimony as corroborative of the results which he has obtained, I feel it right, in giving a resumé of his researches, to lay before the reader his own account of the experiments which most strongly support the position which he maintains.

It had been the conviction of Pavy, as of Bernard, whose pupil he had been, that sugar was being constantly poured into the general circulation from the hepatic veins, and he was engaged in prosecuting inquiries into the destruction of the sugar thus formed in the animal economy. This destruction he fancied took place in the lungs, and while engaged in some investigations relative to this subject he found it necessary to abstract blood direct from the right side of the heart of a living animal, by introducing a catheter through the right jugular vein into the ventricle. To his surprise he found the blood thus obtained scarcely at all impregnated with saccharine matter; so unexpected was this result, and so much at variance with the views which he at that time held, that he confesses that he was inclined to the opinion that the blood could not have been fairly drawn from the ventricle, or that perhaps it was accidentally derived from the blood of the descending cava, not yet freely mixed with that coming from the liver. These suppositions he was by degrees obliged to set aside, as he found, from a great number of observations, that blood thus obtained yields the merest trace of sugar under an ordinary and natural condition during life; the reaction of Barreswil's solution with it being so slight as sometimes to be overlooked

altogether. In repeating this experiment, I have arrived at results quite in accordance with those of Pavy. If the blood be dexterously withdrawn from the right side of the heart, which is best managed by introducing through the jugular vein a small silver catheter fitted to a pipette, the bulb of which is capable of containing about an ounce, and which has a piece of vulcanized Indian rubber tubing so fixed to it that the blood can be sucked in by the action of the mouth; and if, at the same time, the animal be prevented from making any convulsive movements, scarcely a trace of sugar will be discovered in the serum. But if an animal under precisely similar circumstances, so far as regards diet, be killed by pithing, and, ten minutes after death, an ounce of blood be collected from the right side of the heart and the large veins leading to it by the aid of a catheter introduced after opening the thorax, the serum of this blood will be found rich in sugar.

From a consideration of these and like facts, Pavy was led to believe that the blood issuing from the liver was, during life, either entirely free from sugar or very nearly so; and, further, it occurred to him that the liver might also, during health and life, be free from saccharine matter. This supposition, he admits, so strong was his conviction of the truth of the glucogenic function of the liver, he regarded as in the highest degree improbable. Nevertheless, he determined to investigate further, and, being aware of the presence in the liver of the amyloid substance already spoken of, and knowing the readiness with which this substance is transformed into sugar when in contact with blood and at an elevated temperature, he saw the necessity of adopting some means of arresting this transformation without at the same time destroying the principles concerned.

This transformation may be retarded or entirely prevented by cold or by the presence of an alkali or acid. We have, therefore, within our reach two modes of immediately after death preventing the amyloid substance of the liver from being converted into sugar, as it otherwise will be, owing to the moderately elevated temperature of the animal body and the contact of the blood. These methods consist in, either with all possible expedition reducing the liver to a very low temperature, or injecting into its vessels an alkaline (300 grains of potash in three ounces of water), or an acid solution (300 grains of citric acid in three ounces of water)[a].

[a] The quantities here given are only sufficient for partial injections of the liver. Dr. Pavy prefers the latter, as it acts less unpleasantly on the hands. To obtain the liquid for testing, it is necessary to heat with sulphate of soda, filter, and neutralize. Barreswil's solution can then be used.

The following are the primary experiments of Pavy. A healthy dog, which had been for some time kept under observation and fed upon tripe, but not fed on the day of the experiment, was killed by pithing. The abdomen was instantly opened by free longitudinal and tranverse incisions, and 300 grains of potash in three ounces of water injected through the portal vein towards the liver. The injection was allowed to penetrate only a portion of the liver, a part of it having been firmly held by an assistant to secure it from contact with the alkali. The syringe being removed, and the portal vein ligatured, the non-injected portion was separated from the other before the grasp of the assistant was loosened. The injected part, which was rendered pale and soft, was treated in the following manner, to test for sugar:—A piece, being placed in a mortar, was triturated to a pulp. A sufficient quantity of strong sulphuric acid was cautiously added to neutralize the alkali, and leave a slight acid reaction; by which a solid mass was procured, that yielded a clearish fluid on squeezing in a piece of flannel. This fluid was collected, and rendered alkaline with potash, so as to enable the copper test to be applied. It was found that boiling with the Barreswil solution produced no precipitate of suboxide of copper. The non-injected part, treated with the sulphate of soda according to Bernard's method, gave a most abundant reduction of the copper solution. But in order to render the experiment complete, and show that the treatment to which the injected portion of the liver was submitted had not destroyed the sugar, a piece of that which had not been injected was now pounded in a mortar, with a sufficient quantity of a strong solution of potash to thoroughly saturate it, and allowed thus to remain for about five minutes. It was then treated in the same manner as the injected portion, and, on boiling with the Barreswil solution, gave as strong a reaction as that which had been simply heated with the sulphate of soda. After the injection had been effected, the chest was opened, and the contents of the right ventricle removed. The blood presented a perfectly natural appearance, for the capillaries of the liver appear to give way instead of allowing the solution of potash to pass. On examining the blood according to the usual process, the colour of the Barreswil solution remained unchanged under the influence of even prolonged ebullition.

In performing this experiment, everything depends upon the rapidity with which the injection is effected after the life of the animal has been destroyed. The transformation of the amyloid substance of the liver into sugar takes place so speedily

after death, that, unless the greatest promptitude is exercised, an unsuccessful result is obtained.

The same observations are applicable to the use of cold as a means of arresting the post-mortem production of sugar, and of displaying the condition of the liver natural to life.

If a dog be suddenly killed by destruction of the medulla oblongata, the abdomen at once opened, and a piece of the liver cut off and plunged into a mixture of ice and salt, the post-mortem formation of sugar will be prevented. It is necessary to have recourse to certain precautions, in consequence of the extreme facility with which the sugar is formed after death. The freezing mixture of ice and salt should be ready beforehand, and so far liquefied, that the portion of liver experimented upon may be plunged into it and cooled as quickly as possible. A healthy dog, which had been for some time past kept upon animal diet, and had been fed at $10\frac{1}{2}$ in the morning, was suddenly sacrificed by pithing at 4 P.M. The abdomen was instantly opened, and a piece of the liver cut off and thrown into the freezing mixture. The other portion of the liver, after remaining in the animal some minutes, was removed and submitted to a quantitative analysis. The amount of sugar indicated was 2·96 per cent. The frozen liver was also submitted to analysis; sections through the centre, which remained still soft, contained within a fraction of half a grain per cent. of sugar. The edges and moderately thick outside parings were treated so as to yield a highly concentrated spirituous extract. In this the saccharine impregnation was so inappreciable as to be unsusceptible of quantitative determination.

"The only just inference," says Dr. Pavy, "that I can see to be drawn from these experiments is, that the liver does not enjoy the special functional import that has in recent times been bestowed upon it by physiologists. Such a statement is not incompatible with the result of previous experiments. The conclusions upon which our former notions were based were drawn from results obtainable after death. But it now becomes apparent that we are no longer justified in regarding these results as indicating the condition that belongs actually to life. It is not that Bernard's observations were incorrectly recorded, or his experiments inaccurate, but that hypotheses were based upon them which a more extended examination of the subject has shown to have been founded upon insufficient data."

While admiring the acuteness with which Dr. Pavy has pursued the track which observation of minute results first led him to enter upon, it is a great pleasure to be able to testify to

the accuracy of his observations. To bear witness to the truth of the investigations of others, or raise one's voice against the errors that others may propagate, is a duty as agreeable on the one part as it is invidious on the other. It will be believed, therefore, that it is with real gratification that I, in corroboration of the truth of Dr. Pavy's experiment, give my support, feeble though it be, to the views which he has propounded.

Known facts seem to lead almost irresistibly to the following conclusions :—That the liver exercises a special function in forming a substance, which happens to be with extreme facility, by a process allied to fermentation, convertible into sugar. The material in question (amyloid substance of the liver) is always present in the hepatic tissue in the healthy state. During life and health it seems able to resist transformation into sugar. With the destruction of life, and, as a consequence of certain injuries and diseased states, this power of resistance diminishes, or ceases to exist, and saccharine matter appears in the structure of the liver and in the blood; while, under normal circumstances, the blood circulates through the liver, and escapes charged with, at most, an exceedingly minute amount of sugar.

It has been already observed that the introduction into the circulating fluid of the amyloid substance of the liver is accompanied by the immediate transformation of this material into sugar,—a statement which may be easily verified by injecting some of it into the jugular vein of a living animal, when it at once gives rise to the diabetic condition. In like manner, if any cause—such as a blow over the region of the liver, violent convulsive movements, strugglings during operation, or during the administration of chloroform—so to speak, dislodges from the liver some of its amyloid substance, this material, thus entering the circulation, is changed into sugar; and more or less transient diabetes is the result.

While the glucogenic theory of Bernard was still undisputed, the question of what became of the sugar, which the liver was supposed to be constantly forming, was discussed with much earnestness. This question, of course, loses much of its importance in the present state of our knowledge. Nevertheless, the researches of Pavy[a] himself, as well as the experiments of Limpert and Falck[b], should not be overlooked by those wishing to search into the history of the subject before us. The latter authors have shown that every variety of sugar, when introduced into the blood in moderately large quantity, is in

[a] On the Normal Destruction of Sugar in the Animal Economy: Guy's Hospital Reports, 1855.

[b] Virchow's Archives, 1856; and Schmidt's Jahrbücher, vol. xc., p. 274.

part thrown out by the kidneys. Of cane sugar the most is thus got rid of; of milk sugar, a smaller quantity; and of grape sugar, still less;—the last remaining almost entirely in the body when but a moderate quantity is introduced into the blood.

It is not intended in the present communication to enter into a discussion as to the pathology or treatment of diabetes. Before its pathology can be satisfactorily investigated, the physiology of the subject must be placed upon a firm basis. It is to be hoped that much has been done in this direction; and it is certain that of late years many pathological facts of much importance have been established which, but for physiology, would still remain undiscovered. Andral's pathological facts regarding the production of sugar in the animal economy illustrate in a striking manner some of the views lately adopted by physiologists. The remarkable case which he cites, in which a diabetic patient limited to an exclusively meat diet, and at the time using no amylaceous food whatever, produced more than 20 ounces of sugar daily, would at least seem to show that this material may be abundantly produced in the living organism from nitrogenous compounds.

The observations of the same author on the post-mortem appearances of the liver, in five cases in which he had an opportunity of examining it in diabetic patients; Erichsen's remarks on *surgical* diabetes met with as a result of injury of the head; the coincidence of inflammatory and gangrenous affections of the skin (anthrax, &c.) with mellituria; and the connexion shown to exist between cerebral disease and diabetes: all indicate pathological conditions requiring to be carefully scrutinized before the obscurity which hangs over the diabetic condition can be satisfactorily cleared away.

Admitting that up to the present time science has done comparatively little towards materially bettering the condition of the diabetic patient, or arriving at any definite conclusions regarding the nature of this strange complaint, yet it is most pleasing to see the combined efforts of the chemist, the microscopist, the pathologist, and physiologist, all tending in the same direction, all with one object; nor does it appear unreasonable to hope that the period is not far distant when they will be rewarded by being able to grapple successfully with this formidable malady.

Since the foregoing communication was placed in the hands of the printer, I have received the last number of the "Journal de la Physiologie de l'Homme et des Animaux," containing the conclusion of M. Rouget's admirable paper already alluded to,

and one by C. Bernard on "Glucogenic Matter considered as a condition of development of certain tissues in the Fœtus." These communications will be perused with much interest by those engaged in studying the subject treated of in the foregoing pages. Professor Bernard conceives that in animals, as well as in vegetables, the glucogenic and amylaceous matters seem to be present as a constituent principle of the protoplasma, from the bosom of which the organic evolution is accomplished. He finds that all the epithelial membranes, whether of the cutaneous or mucous surfaces, contain, during a certain period of fœtal life, glucogenic matter, under divers forms. At no period of the organic evolution has he been able to find it in the nervous or osseous tissues. In embryos of sheep and oxen, 15 to 20 centimetres in length, the muscular fibre appears under the form of a tube containing nuclei, and an interspersed granular substance, which is nothing else than glucogenic matter.

Glandular tissue, like that of the nervous and osseous system, does not contain this material, the liver alone, among glandular organs, being an exception.

M. Rouget speaks of amyloid substances as being found in the tissues of vegetables under two principal forms: 1st, contained in a cell, as *amorphous* or *granular starch;* 2nd, in the condition of cell membrane, or intercellular substance—*cellulose.* These have their analogous conditions in the tissues of animals, that variety of amorphous starch met with in the cells of the roots of the dahlia, inula, &c., corresponding to the amylaceous plasma (*zoamyline*), contained in the elements of the tissues of the embryo in the cells of certain epithelium (as of the uterus, vagina, tongue); and, above all, in the cells of the hepatic parenchyma in the adult; while animal cellulose is more abundantly found in the lower regions of the animal kingdom.

Zoamyline is, then, the newest name given to that variety of amyloid substance found by Sanson in the muscles, by Bernard in the tissues of the fœtus and the placenta, and now known to every one to be abundant in the liver, and to exist widely diffused throughout the organic structures.

Art. VIII.—*Clinical Cases in Surgical Practice*[a]. By K. I. O'Doherty, F.R.C.S.I., Lecturer and Demonstrator of Anatomy and Operative Surgery at the Ledwich School of Medicine, and Surgeon to St. Vincent's Hospital.

Resection has occupied so prominent a place in modern surgical literature, that any facts, however small, tending to add to our stock of information on the subject, will not perhaps be unacceptable.

I am therefore induced to detail, shortly, the particulars of the following cases recently under my care: they are of comparatively minor importance, involving, as they did, in each case, the removal of but a small portion of the body; but they present features that may be deemed interesting, if not instructive.

In the numerous contributions to this important branch of conservative surgery with which we have been favoured of late years, attention has been almost exclusively directed to the larger joints: resections of the knee, elbow, hip, and shoulder have become "familiar to us as household words;" the minutest details in reference to them have been dwelt upon, and the young surgeon, familiar especially with the valuable papers of Mr. Butcher, published in this Journal, can be at no loss for guidance in his conduct of them, either as regards the best methods of operating, or the most suitable after-treatment.

When, however, he comes to seek for similar information concerning that larger class of cases he will meet with in which partial disease of the bones of the foot requires his operative interference, he will seek in vain for any established mode of practice to guide him; the consequence is, that we daily witness in hospitals the most varied treatment adopted in such cases.

One surgeon, guided by the precept so strongly inculcated by Dupuytren[b], when protesting against Chopart's operation, "in all such cases to remove only just so much of the foot as the disease imperatively required," has recourse to that seemingly barbarous, and certainly unscientific, because uncertain, proceeding of gouging out the diseased structure.

Again, another surgeon, despairing altogether of eradicating the disease by any such mincing method as this, has recourse to one or other of the bold amputations of Hey, Chopart, Syme, or Pirogoff, any one of which is at the best a sad muti-

[a] Read before the Surgical Society. [b] Leçons Clinique des Amputations.

lation, especially to the working man, to whom the full use of the lower extremity is always of such vital importance.

The following cases illustrate in a marked manner the success attending the practice of simple resection when applied to remedying the diseases of the small bones of the metatarsus and the phalanges, and go, I think, some way towards indicating this to be the most efficient mode of proceeding in all cases presenting, like them, the features of uncomplicated disease of these small bones or their joints.

Case I. *Resection of Second Metatarsal Bone.*—Patrick Weldon, aged 18, a resident of Drogheda, was admitted into St. Vincent's hospital on the 30th September. His occupation was that of field labourer, and he stated that he had always enjoyed excellent health until about nine months previously, when one day whilst at his work, he felt some pain in his left foot, which was speedily followed by redness and swelling. A few days after, the swelling "burst," giving exit to a free discharge. This discharge continued, and six weeks later a second opening formed more posteriorly. Matters continued in this way for three months, when, seeing no sign of amendment, he sought relief at the Drogheda County Infirmary. It was there poulticed and kept at rest, but, no tendency to heal exhibiting itself, he resolved to come to Dublin.

On examining it, I found the anterior portion of the foot considerably swollen, especially over the situation of the second metatarsal bone, where the integuments were inflamed, and two fistulous openings existed. One of these was situated near the phalangeal extremity of the bone in the second interosseous space, the other near its tarsal end. Upon probing them, carious bone was felt deeply at the bottom of each, and from the direction which the probe took, the disease was clearly indicated as existing in the second metatarsal bone. The most careful examination failed to detect any evidence of its having extended to the neighbouring bones. Although perceptible fulness and tenderness on pressure existed in the sole of the foot, sufficient to induce some doubt as to the limited extent of the disease, yet, as the boy's health was unimpaired, the tarsal portion of the foot as yet unaffected, whilst the general glandular system exhibited no trace of a scrofulous taint, it was deemed a fair case for trial of resection of the diseased bone with its corresponding toe.

Accordingly, this operation was performed on the 16th of October. An incision which commenced at a point a little posterior to the tarso-metatarsal articulation of the second toe

was carried forwards and obliquely outwards, to embrace the fistulous opening in the interosseous space. It was then passed beneath the base of the first phalanx in the usual manner, and carried back obliquely to meet the origin of the wound. The soft parts were then carefully dissected from the metatarsal bone, commencing at its distal extremity, and gradually proceeding backwards. I found it much more difficult than I had anticipated to separate its posterior extremity. Keeping in view the great importance of not wounding, if possible, the large arteries which communicate by the side of the joint formed by it and the cuneiform bones, induced me to be perhaps more tedious in my dissection than was needful. After a good deal of trouble, I succeeded in removing it. The hemorrhage was very copious, as I found it impossible to avoid wounding the communicans tibialis artery and some branches of the deep plantar arch. There was no difficulty experienced in ligaturing them. I allowed the wound to remain exposed for a couple of hours to the action of the air, and then, having carefully removed the clots, I brought the edges as tightly together as I prudently could, by means of long strips of plaster.

I found I was enabled thus to bring the sides of the three anterior fourths of the wound into close apposition. The leg was kept elevated, and the patient treated in the usual way, water-dressing only being kept applied to the wound. He progressed so favourably during the first week that I had no occasion to disturb the parts further than by changing the water-dressing. Upon removing the strips of the plaster on the ninth day, I had the satisfaction of finding the anterior half of the wound healed by the first intention. On the details of the progress of the case since then, it is unnecessary to dwell. A succession of inflammatory attacks had to be combated, from time to time, in the neighbourhood of the wound.

One or two of these were so severe as to cause me some anxiety for the ultimate result. However, they all terminated in the formation of superficial abscesses, which, being opened early, healed without further mischief. I supported the patient's strength with wine, giving him at the same time free doses of quina and iron, and had the satisfaction of finally seeing the inflammatory action altogether subside.

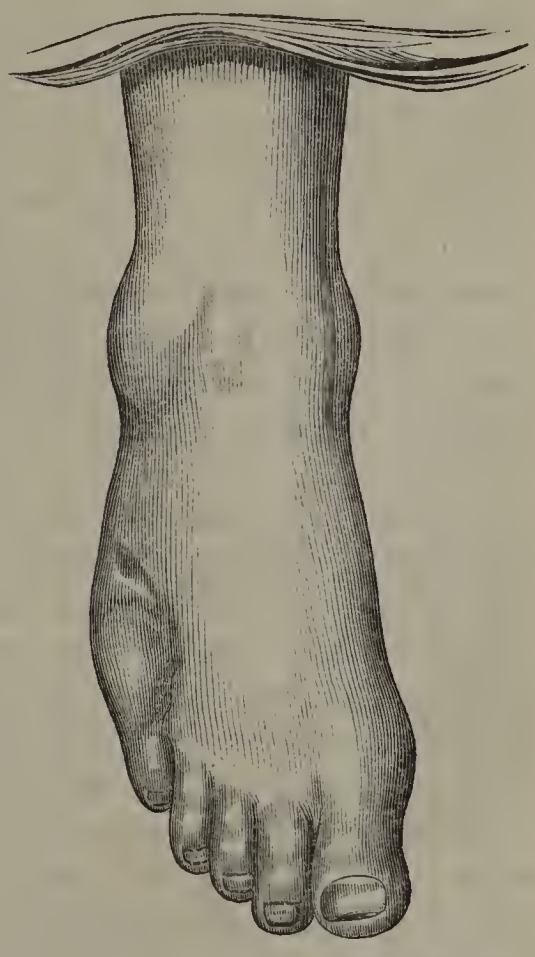
During these critical successions of attacks, three distinct abscesses formed over the outer metatarsal bones, and a fourth opened a way for itself into the sole of the foot: since then, everything has progressed favourably, and I think I may fairly console myself for all the trouble I have had with it, by the reflection that I have left the lad as good a foot as he ever had—a far more satisfactory one than would have been left him had I indulged in my first impulse, to perform Hey's section.

This case appears to me to be of some interest, on account of the rarity of this particular form of resection. I have not, indeed, been successful in discovering, as yet, an account of a similar one which was followed by a favourable result. Mr. Erichsen, in his Surgical Treatise, speaks in very doubtful terms of the success likely to follow the attempt to excise this bone, especially in cases of disease of the kind under which my patient laboured. He deprecates it chiefly on account of the intimate connexion existing between it and the large synovial sac of the tarsus, which almost invariably partakes in the diseased action of the bone. In my case, however, no such complication evidently existed, although an examination of the bone shows that the diseased action had extended back close to the tarsal articulation.

Case II. *Resection of the Metatarso-phalangeal Articulation of the fifth Toe.*—Anne Kelly, aged 16, was admitted into hospital on the 11th of January. She stated that she had always enjoyed robust health until two years ago, when she met with an accident. In rapidly running out of the doorway of her residence, a large nail, which protruded from the doorpost, caught the side of her foot, and inflicted upon her a severe lacerated wound; she suffered much from it at the time, but gradually recovered; the wound skinned over, but continued very tender to the touch; she was able to walk without pain upon it until six months before her admission, when, having occasion to go some distance with a tight boot upon the foot, she found it, on her return, very painful at the site of the old wound; on removing the boot, it swelled, and became again much inflamed. An abscess resulted, which in a few days gave way,

leaving a fistulous opening, that has continued discharging ever since. Lately a second opening made its appearance more posteriorly. She continued, as long as she could, limping about upon it, and endeavouring, by a variety of applications, to induce it to heal. Finding, however, that the inflammation increased, she applied for relief. On examination I found the outer anterior portion of the foot much congested and swollen. On probing the fistulous openings, they were found to converge to the metatarso-phalangeal articulation of the fifth toe, into which the probe readily entered; the joint was completely disorganized.

Her general health was as yet unaffected; the appetite was good; and all her functions were normally performed. No glandular enlargement or other cachectic appearance was discovered. I considered it a favourable case for trial of simple resection of the joint; a form of operation first performed, Fergusson tells us, by the distinguished American Professor Pancoast. A semilunar incision was made, commencing at the proximal end of the fifth metatarsal bone, and extending to the root of the little toe, the convexity being directed inwards far enough to embrace the fistulous opening, which was situated in the fourth interosseous space. A flap was then formed, by turning out the part included within the incision, dissecting it carefully off the bone. The diseased joint was at once exposed; the distal end of the metatarsal and almost the entire of the first phalanx were found in a carious condition. The latter was removed from its articulation with the second phalanx, the articular face of which was unaffected, and the distal third of the metatarsal bone was taken away with a bone nippers; scarcely any bleeding attended the operation. The flap was again laid *in situ*, and the same form of dressing I had found beneficial in the previous case was adopted in this. Strips of soap plaster, of sufficient length to more than surround the foot, bound the parts firmly together, keeping the flap accurately



applied in its proper place; pledgets of lint, moistened with cold water, were applied over the wound, and she was kept, of course, at perfect rest, with the limb slightly elevated. The straps were not removed until the tenth day after the operation, when the wound was found to have healed throughout by the first intention, except at the site of the old sinuses. The subsequent progress of this case so closely resembled the previous one, that but a few words are necessary to describe it. The sinuses continued a long time discharging; occasional slight inflammatory attacks occurred in their neighbourhood, which readily yielded to rest and resolvent treatment. By repeated applications of nitrate of silver, melted upon the end of a probe, and thus conveyed to the bottom of the fistulæ, these latter gradually closed, and a complete cure has resulted. The accompanying woodcut, taken from a sketch of the foot in its present condition, presents scarcely a trace of deformity; the fifth toe, if we except a very slight amount of retraction, exhibiting in no other way the least evidence of its having lost its bony support. She is enabled to run upon it as well as ever.

A striking feature of the operation in this, as well as in the previous case, is that the sole of the foot was left absolutely intact, whilst its breadth was not in the slightest degree impaired. The feet, therefore, remain as perfect organs of support and progression, as if no portion of them had been removed. I may here mention that the boy Walsh continues now, six months after his discharge from hospital, perfectly well, the foot being as useful to him as it ever was, and free from all trace of disease.

Case III. *Resection of a portion of the Tongue with the écraseur.*—Bridget Nugent, aged 19, a healthy-looking girl, was admitted into hospital on the 4th of May, 1858; she stated that for many years she had noticed a kernel, the size of a small filbert, situated at the anterior inferior aspect of her tongue. It had never given her the least pain or annoyance until about a month before her admission, when she began to feel some stinging pains extending from it back towards the base of the organ and parotid region. At the same time she noticed a white spot making its appearance on the surface of it. Finding, after some days, that this spot had increased in size and become fissured, that the kernel itself began rapidly to enlarge, she got frightened, and a severe hemorrhage, which issued from one of the fissures a day or two before her admission, urged her to apply for relief.

When first brought under my notice, the tumour had

attained the size of a small walnut. It was attached by a broad base to the inferior right aspect of the tongue, at the junction of its anterior and middle thirds. It was uniformly hard and smooth to the touch, except upon its free surface, which was fissured and covered with an adherent gray slough; the root, well-defined, seemed lost in the healthy structure of the organ close to its mesian line. When the tongue was drawn in, the tumour, resting in the sublingual space, gave her but little annoyance; but on attempting to speak or masticate her food, the pain became very severe. Her general health was unimpaired. The glands in the neighbourhood of the disease were, to all appearance, perfectly healthy. In carefully examining the nature of the tumour with the aid of the microscope, I had the advantage of being assisted by my accomplished friend, the late Mr. Thomas Ledwich, and, from the appearances exhibited, there seemed no doubt it was a case of epithelial cancer.

A second severe hemorrhage, which occurred a few days after her admission, forced me to active measures, and with the concurrence of my colleagues, Doctors O'Ferrall and Quinlan, I resolved to remove it. I considered it a favourable case for the employment of the écraseur, and accordingly with this instrument the resection was performed on the 10th of the month.

Persuaded of the necessity of avoiding a too hurried section of so vascular an organ, I determined to extend the operation of removal over some hours; and, dreading the amount of pain which would necessarily be inflicted, I had recourse to the expedient recommended by Mr. Hilton, with a view of effectually preventing it. This was to divide the gustatory nerve, on the side intended to be operated upon, as it crossed the floor of the mouth.

I found this by no means so easy a matter to accomplish as I had anticipated from experiments upon the dead body. The free venous hemorrhage caused by the simple division of the mucous membrane over the track of the nerve so embarrassed me in the search for it as to give rise to some delay. Having found it, however, and divided it, I proceeded to use the écrasseur in the manner recommended by M. Chassaignac, and which I explained very fully in a notice of the instrument in a previous Number of this Journal.

Having isolated the tumour with a strong ligature, and then tightly fixed the chain round the part, placing it well at the healthy side of the ligature, I had the girl conveyed to bed, and as she lay quietly there on her back, the instrument was

fixed upon a pillow close by, and on a level with her mouth. Every half-hour the constriction was increased by so much as was indicated by a click of the instrument. Dr. Quinlan kindly relieved me at intervals in the performance of this office; and at 6 o'clock in the evening (the constriction having been commenced at mid-day) the section was completed. A few drops of blood only followed its removal. Immediately after the instrument was removed, the wounded surface of the tongue expanded to its full dimension; and, as I looked upon it, covering almost one-third the extent of the organ, and found no blood coming from it, I could not but congratulate myself on having employed an instrument that accomplished my purpose in so satisfactory a manner.

The further progress of the case may be summed up in a few words:—No hemorrhage whatever occurred; a grayish sloughy pellicle formed gradually over the wounded surface. After some days this began to separate at its edges, and as it did so the lips of the wound appeared to contract towards each other. On the 7th of June the last central portion of this pellicle was thrown off; and, within a week after, the only trace of the operation visible was a large notch in the original site of the tumour. The functions of the organ were not in the slightest degree impaired, and she left the hospital perfectly well.

In this case I think it must be conceded that the écraseur performed the section of the tongue in a more satisfactory manner than we could have anticipated from any other instrument or mode of procedure. Having been, I believe, amongst the first to direct the attention of surgeons in this country to the advantages of this instrument, I may be pardoned if I add a few words in defence of what I cannot but regard as a real boon to the operating surgeon in many of the most disagreeable cases requiring his interference. It occurs to me that the discredit into which it has fallen of late has arisen from the fact of too much having been attempted to be made of it. An impartial judge of its merits will, in my opinion, simply regard it as a substitute for the ligature, and, contrasting the action of the two in all those cases in which we consider it advisable to strangle parts in lieu of dividing or removing them with the scalpel, I cannot imagine any fair grounds upon which we can hesitate in recording our opinion in favour of this instrument, possessing, as it unquestionably does, when properly used, all the advantages of the ligature in preventing hemorrhage, with the additional inestimable benefits of being far more rapid in its action, and much less painful.

Its employment in cases of this kind is, I think, especially worthy of our attention, on account of the fatal results which have attended amputation of the tongue performed in the usual way in those recent cases in the practice of Mr. Syme with which we are all familiar. It is true that my case, involving as it did the section of a portion, and that the least vascular, of this organ, will assist us but little in coming to a decision as to the merits of the écraseur in those more formidable ones requiring the removal of the whole or greater part of it. All that I would venture to suggest is, that the results were sufficiently satisfactory to warrant us in giving it a fair trial in those capital cases, before we agree to the dogma of Mr. Syme, that they are to be considered as beyond the reach of our art.

One point very important to bear in mind when employing the instrument is, I think, clearly established in this case. I refer to the necessity of accommodating its action, as it were, to the vascularity of the part operated upon.

I was enabled to remove this tolerably large portion of the tongue without, I might say, the loss of any blood. This I attribute altogether to extending the period of section over six hours, thereby giving ample time for the blood to coagulate in the constricted vessels before dividing them. I entertain no doubt whatever, that, had I divided the parts at once with the instrument, the hemorrhage would have been almost as great as if I had employed the scalpel. I am induced to lay stress upon this from observing that Mr. Skey, in his late work on Operative Surgery, regards this delay as unimportant. I feel, I confess, some hesitation in differing with so distinguished an authority, but until I shall see as large a portion of the tongue removed, using the instrument in this rapid manner, with as bloodless a result as followed the mode I adopted, I shall continue to adhere to the rules recommended by M. Chassaignac. With regard to the section of the gustatory nerve, I must confess I should not be inclined to repeat the experiment, had I again to operate in a similar case, partly because I fear the search for the nerve, as a general rule, will be likely to give the patient almost as much annoyance as the section of the tongue itself, chiefly however, because I am disposed to think it altogether unnecessary. In the case I have detailed, the section of the nerve, I imagine, had little effect in altering the amount of pain produced by the instrument, inasmuch as the section with the latter had to be made very close to the mesian line of the tongue, much closer, indeed, than I had imagined would have been necessary, until I came to fix on the chain of the instrument, and therefore at a part which would

naturally be under the sensory influence of the opposite nerve. That this was so, was evidenced by the amount of pain caused by the first three or four movements of constriction, which was so great as to compel me to employ chloroform to subdue it. After these first few constrictions, however, when in fact the part enveloped by the chain was *strangled*, all sensation seemed to depart, and, during the remainder of the time occupied in the section, she suffered no pain whatever.

Subsequent experience of this instrument in the removal of piles, and other small tumours, in cases in which chloroform was not employed, has tended to confirm in my mind the conviction, first entertained after witnessing the section of the tongue in this case, that the operation of removing or dividing parts with it is comparatively painless, after the parts have been well constricted by the chain of the instrument—a fact which, if verified, it is needless to say, would enlarge to a great extent the sphere of its utility; the great objection to its more general employment at present being the fear of the pain likely to be caused by it, requiring the patient to be kept under the influence of chloroform for a dangerously protracted period.

Art. IX.—*Observations on the Action of the Pancreatic Juice on Albumen.* By Wm. Brinton, M.D., &c., &c. In a Letter to the Editor.

Sir,—Your Number for November, 1858, contained an able analysis of some views lately propounded by Dr. Corvisart, respecting the action of the pancreatic juice on albumen within the living body. The direct contradiction afforded to some of Dr. Corvisart's statements by those of various other observers, published both before and since his elaborate monograph, induces me think your readers may be interested in a brief communication of the result of my own observations on this subject. Without presuming that these observations reconcile all the conflicting statements hitherto made on both sides of this important question, I venture to think that they indicate the cause of some discrepancies; and even in some degree vindicate the accuracy of both Dr. Corvisart and his antagonists. And I may add, that they seem to afford some suggestions respecting the main question at issue, as well as some hints respecting the most profitable direction of future inquiries.

It is chiefly as regards the solvent power of an infusion of pancreas on albuminous substances that Dr. Corvisart and his antagonists are most directly at issue. In the experiments of

Dr. Corvisart, such an infusion dissolves an enormous quantity of albumen, transforming it into a substance akin to peptone. In those of Keferstein and Hallwachs (amongst others), an exactly similar infusion evinces no such power; or only shows, after a long contact with the albumen, a very feeble and scanty solution of this substance—a solution which is precipitable by heat and acids, and is attributable to the putrefaction evidently associated with the solvent process.

The method I generally adopt is to mince a given weight of pancreas very finely, before pounding it to a pulp in a porcelain mortar. Twice or thrice as much distilled water is then gradually added to and rubbed down with the pulpy mass. The whole is then filtered, so as to yield an opalescent (almost milky-looking) fluid, more or less tinged with the casual blood-contents of the gland. With suitable precautions, this fluid is a better and safer (i. e. more uniform) preparation of the pancreas itself, than any solution of the so-called pancreatine which can be prepared from it by precipitation with pure alcohol. Indeed, your readers will, perhaps, gather from what follows that, both in this and other respects, such a simple process has great advantages over that usually adopted by Dr. Corvisart and his antagonists.

If to such an impure pancreatic juice we add a certain quantity (say one-third its weight) of very hard-boiled white of egg, cut into minute cubes (a variety of albumen which, with all its faults, is a more uniform and delicate test of solvent power than any other), and expose the mixture to a steady, even temperature of 101° or 102° Fahrenheit, for four or five hours together, what effect do we observe? Why, perhaps, in a number of experiments, a very variable and uncertain one. Sometimes (like MM. Keferstein and Hallwachs) we may see no solution at all; sometimes (like Dr. Corvisart) a rapid, energetic solution, which dissolves a large part of the albumen present into a liquid which, in respect to its reaction with heat, acids, &c., has many (if not all) of the well-known reactions of peptone.

Two circumstances, however, distinguish this solution of albumen from that effected by an artificial gastric juice. One is, that in most cases, and for equal proportions of albumen, the pancreatic solution is a slower process, occupying from two to six times as long a period. The other is, that it is accompanied by unmistakable putrefaction.

To be accurate, however, the latter remark ought to be qualified by the statement, that an energetic solution is often seen to occur, when, as yet, none but a peculiar, penetrating,

quasi-syrupy odour is discernible in the mixture. And though this peculiar smell rapidly merges into a powerfully putrefactive one—always does so long before the solution is saturated with albumen—still we ought not only to be cautious in concluding a direct causation; but may fairly ask, before admitting it, for analogies to such a process of solution by other (even if less rapid and energetic) putrefactive agents and substances.

It is further due to Dr. Corvisart to mention, that there is often a singularly close relation between the quantities of albumen which can be dissolved by a given weight of gastric mucous membrane and pancreas, or pepsine and pancreatine respectively. The numerical proportions are frequently almost identical.

In many cases, heat and nitric acid recover by precipitation a variable proportion of the albumen dissolved by the pancreatic solution. In these cases, however, a further continuance of the process completes the change of the albumen. How far they indicate that the solution and the metamorphosis are two processes, or two distinct parts of the whole process, I cannot at present decide.

Acids and alkalies seem seriously to affect the solvent power of the pancreatic infusion. In proportions of $2\frac{1}{2}$ or 3 per cent. (a proportion in which hydrochloric acid gives its maximum assistance to the solvent powers of a gastric infusion), the acid often hinders any material solution, an effect which is not even suspended by advanced putrefaction of the mixture. The alkali, sometimes indifferent, or even injurious, to the solvent process, generally ends by exalting the power of its mixture considerably beyond that of the pure aqueous infusion, an exaltation which usually concurs with a heightened putrefaction.

But, after all, it is the discrepancy between the affirmation and the denial of the solvent power of the pancreatic infusion which is the most obvious and interesting point for inquiry. An accurate, but unphilosophical observer, meeting with a single well-marked instance on either side, might, perhaps, feel so convinced by what is usually regarded as ocular demonstration, as unhesitatingly to adopt the corresponding opinion. But a careful consideration of such details as those just mentioned, would make even a single instance of the solvent process suggest a more extended and varied inquiry. While the apparently contradictory results which are suggested by such an inquiry, imperatively call for an explanation capable of reconciling them with each other.

It was the close connexion above alluded to, between the

solution effected by a pancreatic infusion and its own putrefaction, which led me to the simple (and apparently satisfactory) observations which reconcile this discrepancy. In a process which concurs with putrefaction, not to say depends upon it, it obviously became of extreme importance to watch the conditions of experiment furnished by the health and condition of the animal supplying the pancreatic infusion; and the time, place, temperature, and other circumstances under which that infusion was made, or to which it was subsequently exposed.

The process of infusion already described, thus seemed peculiarly advisable; not only from the completeness of the solution it afforded, but from the comparatively short time expended in its preparation. The first portions of the filtered liquid could be applied to the digestion of albumen in scarcely more than a few minutes after the death of the animal.

Hence, after finding that the pancreas of the ordinary human corpse showed, in various observations, a solvent power far transcending that of a healthy newly-killed animal, it became my object:—firstly, to exclude all admixture of putrefaction; and secondly, to operate with successive portions of the same pancreatic infusion, in successive stages of putrefaction, or rather of what was necessarily (if not sensibly) a progress towards this state.

During very cold weather, a pancreas weighing 1532·5 grains was removed from the body of a fine healthy sheep instantly after death, and at once minced, pounded, and rubbed down with six ounces of distilled water. Filtered at a maximum temperature of about 42° Fahrenheit, it slowly yielded about $2\frac{1}{2}$ ounces of a milky opalescent fluid; scarcely at all tinged with blood. The solvent power of this fluid was then examined by digesting in it small cubes of albumen at a heat of 102° or 103°. Eighteen hours after death, a six hours' digestion showed no perceptible change in the albumen. Sixty hours after death, another portion of the pancreatic infusion left its albumen unchanged by a digestion of six hours and a half. Five days later, this last portion was again experimented on, in contrast with equal proportions of the clear red liquid and the cloudy granular semi-fluid precipitate, into which the remainder of the original pancreatic infusion had by this time separated, giving off a putrefactive odour. That which had already been digested some hours, at a heat of 103°, took up more than four-fifths of the albumen submitted to it during this seven hours' digestion; the liquid and the sediment (which had both been kept at a maximum temperature of 45°), one-third and one-fourth of their albumen re-

spectively. Lastly, four days later, these portions had acquired such an increase of solvent power as to equal those previously digested. The whole quantity ($2\frac{1}{2}$ ounces) thus showed a total solvent power, which may be estimated as corresponding to about 340 grains of moist albumen, taken up by an infusion of $89\frac{1}{2}$ grains of dry pancreatic substance, during from 20 to 26 hours of digestion at 102° Fahrenheit.

From such an observation it is difficult to avoid the conclusions—that the temperature to which the pancreas and its infusion are exposed after death materially affects the solvent power of the latter on albuminous substances; and that it does so by checking or furthering that process of decomposition with which this power is in intimate, if not absolutely causal, connexion. And from exactly similar observations made during such warm moist weather as is now (June 21) prevalent in London, I am entitled to affirm that fifteen hours of this weather, with a temperature of 66° Fahrenheit, can do as much towards setting up the solvent process as a week or more of dry cold easterly wind and wintry weather, at a maximum heat of 45°. That other circumstances capable of modifying this solvent process may also be found in the health of the animal, the disease or injury causing death, &c., I do not at all deny. But into these, my limits will not allow me to enter.

Whatever the exact nature of this process, it seems to be quite specific to the pancreas. I have not only failed to find any analogous solution of albumen effected by infusions of a variety of other tissues; but have especially verified this failure in structures which, like the sub-maxillary and parotid glands, might have been most expected to afford such a parallel; and in cases in which the pancreatic infusion, similarly prepared and experimented upon, possessed its maximum power.

But while I concur with Dr. Corvisart, and various other observers, in assigning to the pancreatic infusion and secretion a great (and if only quantitatively) special power of dissolving albuminous substances, I must demur to the hasty deduction from such a fact, that the pancreas discharges a special function of this kind in the healthy living body. To assume that this solution is a mere casualty of putrefaction, is, I think, neither wise nor accurate. Indeed, the foregoing details not only illustrate the value of much that is still buried in the rich and comparatively unexplored field of the chemistry of decomposition, but they also clearly promise to future researches some definite information on the pancreatic function. But contrasting the process of solution to which they refer, with that effected by the stomach; contrasting its slow, dead, irregular, putrefactive

character, with the rapid and energetic change brought about by an artificial gastric juice, and the antiseptic (I had almost said living) influence this latter exerts on the albuminous matters it dissolves,—I think that the solution of albumen, as a pancreatic function, is a theory which we are quite entitled to reject, until based on other and stronger foundations than any hitherto adduced. Indeed, it may be questioned if there be any proposition which would command a more implicit assent from both the physiologist and the physician than this—that the most distant approach to putrefaction in any of the numerous secretions or contents of the intestinal canal, is proof positive of the absence of health, the presence of disease and decay. Certainly, out of the body, healthy bile, saliva, mucus, and a variety of other substances of the same kind, remain weeks, or even months, at a fluctuating temperature, and yet show no trace of such a change.

Perhaps I ought to add that I have not repeated the vivisections by which Dr. Corvisart further sustains the conclusion thus demurred to. But while they seem open to some doubt, as regards their excluding all reception of gastric juice from the stomach, on the one hand, and all inflammation and decomposition, on the other,—I venture to think that indirect contradiction, which is afforded by the above experiments on the pancreatic infusion, scarcely less valid than a direct denial. In other words, in those secreting organs,—in which whatever can be effected by the elaborated secretion can, allowing for dilution and impurity, be exactly repeated by a properly prepared infusion of the active tissue,—simple and numerous observations on healthy animals, immediately after a sudden and comparatively painless death, seem to me to yield far more trustworthy answers, to inquiries respecting their reactions, than the obscure and uncertain responses which agonized Nature often gives to the "question by torture," as applied by any but the most practised and skilful hands.

I am, Sir, your very obedient servant,

William Brinton.

London, June 21, 1859.

Art. X.—*Cases of Empyema, with Remarks on Thoracentesis.* By Josiah Smyly, A.B., Surgeon to the Meath Hospital, &c., &c.

The propriety of tapping the chest in cases of effusion into the pleura has been called in question by such high authority[a],

[a] See Lancet for November 17, 1855, p. 469.

that I may be excused for bringing forward the following cases. There were others, of which I have taken no record. The first case of the kind I ever operated on was perfectly successful; the effusion was a sequela of small-pox in a boy. Another was sent to me by Dr. Henry Head, and was operated upon in the Meath Hospital; the patient was a young girl, who perfectly recovered.

The result of my experience is, that while I have seen many relieved, and some snatched, as it were, from death, by the operation, I have never seen any injury done by it; while I have to regret cases allowed to perish without this effort to save life being made. One was that of a little boy, whom I was asked to see by a friend. We agreed upon the propriety of tapping. He was cautious, and wished to have another opinion before doing it. The gentleman who was consulted, hearing bronchial respiration, dissuaded from the operation. On post-mortem examination, it was found that the case would have been a most favourable one for it.

With regard to the mode of operating, I never make a previous incision, but, as was first practised by Baron Dupuytren, plunge the trocar and canula at once into the chest. In some cases I have (as in Case V.) used Weiss' grooved needle previously. Although the admission of air is not so injurious as some say it is, viz., Dr. Rebard of Lyons, yet I have generally employed some valvular contrivance, or a gum-bottle and stop-cock, which I have found very convenient.

In Case VII. I applied nitrate of silver to the wound to make the opening fistulous; this did well. I find Dr. Petel[a] recommends the application of caustic potash to the intercostal space some hours previously to opening into the cavity of the pleura; I have found this an admirable method for opening large chronic abscesses, but would prefer applying nitrate of silver to the wound when we wish to make the opening fistulous. I much prefer the application of caustic to the insertion of a tent, or India-rubber tubing.

When the effusion is aqueous, it is generally removed by absorption under repeated blistering, &c., mercury, digitalis, and squills. This case is considered peculiarly unsuited for paracentesis; "the serous cavity," it is said, "is almost invariably changed into a cavity pouring out purulent matter," &c. It is seldom necessary to have recourse to thoracentesis in hydrothorax, but when the oppression of breathing is very great, and the quantity of fluid remains undiminished under active treatment pursued for a sufficient length of time, then we

[a] Gazette Médicale, September, 1840.

should have recourse to the operation, as in Case III.; and, as in that case, may escape the formidable results threatened. In the first operation on this man air got pretty freely into the chest, but no decomposition or change took place in the remaining fluid; neither was there any constitutional disturbance.

Case I. *Empyema following Measles; Thoracentesis; Recovery; Patient subsequently dying of Hydrocephalus.*—J. Neal, aged seven years; in April, 1848, had measles, on recovery from which he had an attack of pleuro-pneumonia. The latter end of August the physical signs of effusion into the right side of the thorax were distinctly manifested; during the month of September he was repeatedly blistered, and mercurials were given. On the 6th of October the right side of the chest measured two inches more in circumference than the left; the liver was depressed; the right side of the chest was dull on percussion, and there was that bronchial respiration heard which so often deceives; the intercostal spaces were dilated; there was no œdema. A trocar, No. 3, was introduced between the fourth and fifth ribs, on a line with the apex of the pit of the axilla; although the trocar was pushed in deeply, and a probe passed through the canula, yet no matter could be got to flow out; the wound was closed.

October 9th. Another attempt was made in a different place, to avoid any adhesion or false membrane, which might have caused the failure as in the first operation. On this occasion two quarts of homogeneous matter were drawn off. This child went on favourably, and on the 24th of December he was quite recovered, and though he had been greatly emaciated, he has now regained flesh and strength.

January 21st, 1849. Some few days ago he was suddenly seized with symptoms of water on the brain, and expired this morning.

Case II. *Empyema; Thoracentesis; perfect Recovery.*—William Smith, aged seventeen years, eight weeks ago was attacked with pleuritis; he has unequivocal signs of empyema of the left side; the heart is displaced to the right; the fluid is presenting in two tumours, one near the sternum, between the cartilages of the second and third ribs, the other just below the nipple. The lower tumour was punctured with a lancet, and a quart of purulent matter was evacuated. Seventeen days after the patient was convalescent; he was able to sit up; the fistula was still discharging; he was extremely emaciated. On the twenty-eighth day after the operation he was going

about, but was very weak. On the forty-first day after the operation he was dismissed cured. He had gained flesh and strength.

This patient was under the care of Dr. Law in Sir Patrick Dun's Hospital, who did me the favour to ask for my assistance in this case.

Case III. *Hydrothorax of five months' standing, successfully treated by Thoracentesis.*—Thomas Flanagan, aged 27, a country labourer, five months ago had an attack of pleurisy of the left side, brought on by exposure to wet and cold. He was actively treated by venesection, &c., but was never free from uneasiness in his side. On his admission into the Meath Hospital there were unequivocal signs of a pleuritic effusion. The left side measured one inch more in circumference than the right; the heart was dislocated beyond the middle line of the sternum. There was no œdema of the integuments, nor protrusion of the intercostal spaces. Various means to promote absorption were tried, such as mercurialization, blistering, &c.; but as these all failed to make any impression on the fluid, Dr. Stokes, under whose care this patient was, proposed to have the chest tapped.

May 11, 1844. The chest was punctured with a hydrocele trocar and canula, without any previous incision, between the seventh and eighth ribs, about their middle, keeping close to the upper edge of the lower rib. Sixteen ounces of a greenish translucent fluid were drawn off. Some air was sucked in, and the fluid ceased to flow out. The canula was withdrawn, the wound closed with adhesive plaster, a compress, and bandage.

June 3rd. The patient expresses himself to have been greatly relieved by the operation. There was no feverish excitement; the left side is tympanitic.

21st. The side having filled to the same extent as before, the operation was repeated. On this occasion a gum-bottle, furnished with a stop-cock, was used to suck out the fluid and prevent the admission of air. Seven imperial pints of the same kind of fluid were drawn off. The next day he was low and weak, and complained of some pain in his left side.

24th. He was stronger and better. A loud splash is heard on succussion.

July 12th. Shortly after the last report, all the fluid was absorbed. He is now perfectly recovered, and about to return home.

Case IV. *Empyema in a case of Phthisis; Thoracentesis, with relief.*—Miss B., aged 18, for some years past has been in a delicate state of health; a year ago had symptoms of consumption, and was seen in consultation by Drs. Stokes, Corrigan, &c.

April 10th. Was attacked with irritable stomach, rejecting

her food, diarrhœa, &c. She was then seen by Dr. Burke, of Molesworth-street, who detected a pleuritic effusion in the left side of the thorax. On the 27th I saw her, in consultation. Blisters, &c., were ordered.

May 11th. The effusion has gone on increasing in quantity. Breathing has become exceedingly laborious and short; she can lie only upon the left side. The heart is pushed up to just under the middle of the left clavicle. The left side measures two inches larger than the right; the intercostal spaces do not protrude, and there is no œdema of the side. Dr. Stokes was now called in consultation. It was agreed to operate, with the view of affording even temporary relief. The thorax was punctured between the fifth and sixth ribs, with a hydrocele trocar and canula, without any previous incision, and five and a half imperial pints of purulent matter drawn off. She bore the operation well.

A few days after, the pleural cavity began to refill, and in a fortnight's time was as full as before the operation. She now began to expectorate purulent matter, and the left side became tympanitic on percussion. She sank gradually, and died on the 14th of June.

She was greatly relieved by the operation. She slept comfortably, and could lie recumbent for several nights after.

Case V. *Empyema after Scarlatina; Thoracentesis; Recovery.*—John Mahon, aged three years and a half. Four months ago had scarlatina; convalescence was slow; had swelled tonsils, &c., and a cough; on the 17th of November, 1842, it was discovered that there was an effusion into the right pleural sac. The side was at first blistered, and after the healing of the skin a turpentine liniment used, and subsequently tartar emetic ointment. Calomel was administered internally, and afterwards mercurial pill and hydriodate of potash in combination. This treatment extended over three months without effecting any improvement in the local affection, while the general health was rapidly declining, and the little patient emaciated to a great degree. The side is painful to the touch, and is œdematous; it measures larger than the other. Dr. Stokes saw this patient in consultation with me, and agreed as to the propriety of tapping.

November 19th. I punctured the side with Weiss' grooved needle, and, finding purulent matter, I enlarged the opening with a sharp-pointed bistoury; having taken seven or eight ounces of matter, I covered the opening with a piece of lint, retaining it in position by a piece of adhesive plaster, so as not to close the wound, but to act as a valve. The child bore the

operation well, and was much relieved. Two days after, the wound was opened, and two ounces of matter discharged. The child was considerably improved in general health and strength, and left the hospital quite cured.

Case VI. *Empyema in a broken-down subject; Thoracentesis, with relief.*—Michael Maguire, aged thirty-four years, has been long labouring under stricture of the urethra and fistula in perineo; on the 27th of December he was seized with rigors, followed by pain in the right side, and other signs and symptoms of pleuropneumonia, to relieve which he was blistered and mercurialized.

February 10th. There being evidence of pleuritic effusion, an exploratory puncture was made with Weiss' grooved needle, but no fluid was discharged.

24th. A fluctuating tumour now presents at the right mamma; a trocar and canula, armed with a valve, was introduced into it, and two quarts of homogeneous purulent matter were drawn off, without any air being allowed to enter the chest.

March 9th. Has been tapped twice since last report, and on each occasion with considerable relief. He now, however, expectorates purulent matter.

12th. Feeling himself sinking, he left the hospital, and, a few days after, he died.

There was no post-mortem examination allowed.

Case VII. *Empyema; Thoracentesis; Recovery.*—On the 18th of September, 1858, I was called to see Miss B., aged five years and a half. She was affected with great distress of breathing, and a loud, croupy, spasmodic cough. These urgent symptoms set in within the last twenty-four hours. She had been ill for a fortnight previously, and was attended by Mr. Finucane, of Blackrock. Her symptoms were those of gastric remittent fever, without any local pain, till the 17th, when she complained of stitch in her right side. Mustard poultices, &c., &c., failing to give relief, I was requested to visit her on the 18th. The posterior part of the right side of the chest was dull on percussion. A blister was applied, and calomel, in small and repeated doses, was ordered. The dyspnœa, cough, &c., went on increasing in severity till the 22nd, when she seemed to be quite in a moribund condition. The operation of thoracentesis was now proposed to her anxious mother, who entreated that her child should be spared a hopeless experiment. She ultimately yielded, on being persuaded that but little pain would be inflicted. A very small trocar and canula, such as is used for exploring tumours, was introduced, without any previous inci-

sion, between the fifth and sixth ribs, and one pint of purulent matter was withdrawn. The following day the little patient was greatly relieved. There was still, however, shortness of breath; great quickness of pulse; and the patient was covered with perspiration.

24th. Patient going on favourably; but the lower part of the right thorax is dull on percussion.

October 1st. An empyema, of necessity, has formed at the place where the puncture was made. This was opened, and two ounces of thick purulent matter were evacuated. The edges of the wound were touched with nitrate of silver, to prevent adhesion.

6th. The fistula has been discharging freely; general health has greatly improved; she takes broth, bread, and milk.

November 30th. The child has been in the habit of swallowing the expectoration; she latterly has vomited up what she had swallowed, and it is quite purulent. Her breathing is good; and the respiratory murmur is heard all over the right side of the chest, which is perfectly clear on percussion.

March, 1859. The fistula remained open, discharging freely for some time; ultimately it closed; the child is regaining strength.

May 16th. I have just seen this little girl. She is in delicate health, and there is reason to fear that disease is forming in the lung. The lower and back part of the right side of the chest is dull on percussion, and the upper part is a good deal drawn in; however, the child goes about, and drives out, and eats her food with appetite.

Art. XI.—*Incisions in Anthrax.* By Maurice H. Collis, F.R.C.S., Surgeon to the Meath Hospital and County Dublin Infirmary, &c.

The incision into anthrax, whether made early or delayed till sloughing has done part of the surgeon's work, must be deep rather than extensive. Usually it is said anthrax is a flat swelling. The fact of its flatness, or rather of its extent, hides the real amount of elevation, which is, in most case, considerable. Hence incisions into anthrax seldom go down *through* the inflamed skin and areolar tissue. But even if they did go down to the fascia, they would fail in effect unless they also went through it. The fascia is highly inflamed in anthrax; in fact the essential difference of anthrax from furuncle consists in the inflammation being deeper and implicating the fascia. When fascia is inflamed, much plastic exudation takes place, both in

its substance and under it; and the tendency of anthrax to spread indefinitely is to be thus accounted for. The pent-up plasma, quickly producing pus and slough, can get no vent until there is an adequate opening in the fascia, and this opening should be made by the surgeon as early as possible, if he would avoid the unpleasantness of useless and repeated cutting, and the extensive sloughing which will occur if he neglect to make it. Plastic exudations find great facility in travelling under the fascia, dissecting and destroying its vascular connexions, and ultimately causing much of it to perish. This is well known, as a general principle of surgery, and it is strange to find it overlooked as the cause of the spread of anthrax. We readily acknowledge the mischief it does in periostitis, in diffused inflammations of erysipelatous character or connected with paronychia, and in many other analogous cases; but books of surgery are, for the most part, silent about it in the case of anthrax. And yet every one must have observed phenomena which can only be explained by it. The extent and mode of extension of the swelling, the real depth to which the surgeon must cut if he is to do good rather than harm, and the fact of large flakes of fascia ultimately coming away as dead core (in addition to areolar tissue), leaving the underlying muscles bare, must have been often observed, and must often, doubtless, have had their influence on the practical observer; but the junior surgeon and the pupil have not been shown their practical bearing. The rule I have given above, to cut deep rather than wide, is founded on the observation of these facts, and will be found satisfactory, saving the surgeon the opprobrium of cutting twice or oftener without benefit to his patient. It is very easy to know when we are deep enough; by taking hold of the flaps made by our crucial incision, we feel if they are quite loose. Our incision is not deep enough unless we can lift up the point of each flap with ease from the parts underneath. This cannot be done unless our knife has gone through the fascia, and made a crucial incision in it almost as extensive as in the skin. The wounds we have made should be almost as deep at their extremities as in the centre, where they intersect. If we have made our incisions early, before actual sloughing has commenced, as we sometimes, though rarely, have an opportunity of doing, the flaps will curl up if the wound is deep enough, and will leave a widely gaping wound; but if we do not see the anthrax until more or less of the skin is undermined and dead, the gaping of the wound will not be so marked, and the best test is the one I have given above, of lifting the flaps with a forceps, and proving that they are loose. If this rule is followed, we shall have few cases in which we must come and cut again.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The History of Prostitution: its Extent, Causes, and Effects throughout the World. (Being an Official Report to the Board of Alms-House Governors of the City of New York.) By WILLIAM W. SANGER, M.D. London: Sampson, Low, Son, and Co. New York: Harper and Brothers. 1858. 8vo, pp. 685.

A SUBJECT that has fruitlessly engaged the earnest attention of legislators throughout all ages, from the days of Moses down to our own time—that has baffled the wisdom of the sages of antiquity, and foiled the power of the Church, no matter at what period of its history, or at whose hands it has been exerted—that affects not only the lord of creation, man himself, from the results that may accrue to him in his own proper person, but that touches him still more home, that cuts deeper still into the most sensitive fibres of his heart, nay, even of his brain, in the manner in which it involves the interests of those dearer to him than life itself: a subject that may involve the honour, the temporal, and peradventure the eternal, weal or woe of mother, sister, or daughter, cannot be treated as one of light importance, or as being unworthy of our most serious and anxious consideration at all times.

The very difficulties that beset the subject, the almost Utopian character of the wish, that is father to the thought, that means should be devised for its palliation, if not for its suppression and extinction, its thorough eradication, as it were, from our sinful nature,—render every step taken in that direction of the utmost importance to the philanthropist, and much more so to the practising Christian. In no one of his attributes does the nature of man more nearly approach to that of his Divine Master than when he is engaged in a labour so congenial to the example set him by Him that was without sin—when he de-

votes himself to the truly noble, the truly charitable and Christian-like task of raising from the ground a sister sunk in shame, and steeped in misery and sin. And, if it be his lot to save that woman from the depths of moral turpitude in which she has hitherto been sunk—if he rescue her from the waves of guilt that threaten to engulf her, both body and soul—if indeed he do succeed in his effort, and she does go forth, and sin no more—then has he nobly vindicated his prerogative as the protector and guide of the sex that looks up to him for countenance and protection, and the feelings that should throb within his breast are such that monarchs on their thrones might well envy him their possession.

Entertaining such views with reference to the merit that attaches to exertions thus put forth on behalf of a unit in that vast sum of human frailty and guilt that disgraces, and has throughout all ages disgraced and defaced God's noblest work, what must be supposed to be our feelings in respect of those who, in a more comprehensive spirit of benevolence, undertake the self-imposed, laborious task of investigating this leprous disease, and probing it to its very bottom, in all its hideousness and disgusting repulsiveness—a task for which they can expect no earthly remuneration at all adequate to the toil that they expend in its execution, and as a requital for which they but too frequently receive an amount of abuse and execration which they can have but little anticipated. In no case is the old adage more strikingly verified than it is in this, that you cannot touch pitch and not be defiled. To do adequate justice to this theme, to trace the evil from its root, the author has to present to his reader an amount of moral filth and abomination for which he cannot by any possibility have been prepared; and though to the pure mind all things are pure, still it is difficult to dissociate in the reader's imagination the author from the actor in these vile scenes; and the greater the vigour, force, and fidelity with which he holds up the mirror to nature, the more likely is he to be accused of pandering to the very *lowest* grade of that vice which he seeks to lash and to hunt out of society. Motives of the vilest and most debasing character are assigned as the true reasons that actuate him in the prosecution of his work; and thus results it that people are actually deterred from undertaking the discussion of a subject, or attempting to suggest a remedy for that moral cancer which is feeding on our people, from the highest to the lowest classes, which is sapping society to the innermost, and seems to acquire renewed vigour and energy as it progresses, blooming and thriving on the ruin it effects around, whilst everything that it touches sickens, withers, dies, and putrefies.

It has been forcibly and happily observed that revolutions are not effected with rose-water: so in our minds must it be with the subject that we are at present considering. To arrive at sound conclusions, we must reason from correct premises, and we can only do so in this instance by examining the history of prostitution from the earliest dates of which we have any record; by weighing well, from the testimony of contemporanous writers, the extent to which it had permeated their society; and by a retrospective consideration of the prophylactic and curative measures adopted in former days, and the comparative success that attended their enforcement, can we alone arrive at what will be likely at our hands, and in the present aspect of society, to, in some degree, mitigate an evil that is crying loudly for redress. Well aware are we of the fact that

> "Every woe a tear may claim,
> Except an erring sister's shame;"

that many exist amongst us, who consider fit justice would be meted out to this subject by passing it over in silence, and by ignoring its very existence. But we ask, in all sober seriousness, in all honour and truth, are the people who would so treat it, the parties by whose conduct we would wish to regulate our lives? Are they not rather people who shudder at the name of a vice which they secretly favour or practise, who seek, at any expense, and by the affectation of some *form* of virtue, to preserve the tattered remnants of a damaged reputation—people who adopt as their rule of life the maxim, "Assume a virtue, if you have it not?" At least our experience is to this effect, and we believe it to be the experience of all who have mixed to any extent in society, and who are at all familiar with the subject of which we treat, that none are so prudish as those who have least reason to be so; none so generous, none so forbearing to an erring sister's shame, as those who require not in their own person a similar consideration. That occasional exceptions may be found to this statement, we care not to deny; but this we boldly assert, that in the vast majority of cases, what we have now advanced as being the fact will be found to be the rule; and, as it is now, so was it of yore, and will be for ages yet to come.

The suggestions at various times promulgated for the relief of this, which in our days has received the not inappropriate term, "the social evil," may be fairly reduced to three heads: 1st. The effort to suppress prostitution by legislative enactment, and penalties levelled against all those who, either for

pleasure or gain, pursue this unhallowed calling. 2nd. The suggestion that the evil may be nipped in the bud; that, in fact, its development may be altogether prevented by the culture of the moral faculties, by elevating the standard of education, especially amongst that class which furnishes the ranks of prostitution with the greatest number of recruits. 3rd. The idea, originating with some of our more practical philanthropists (amongst which number we are proud to rank members of the gentler sex, as remarkable for their strict sense of virtue as for their active benevolence), that asylums should be opened for the reception of such of these unfortunates as, wearied with their life, seek for fostering care and crave admittance within their portals. Under these three heads may all the proposed remedies be classed; for in our opinion it is not just to rank amongst proposed remedies for the evils of prostitution those which aim only at an abatement of the *dangers* that attend on an indulgence in its debasing gratifications, and which propose to afford voluptuaries a safer stage on which to exercise their libidinous promptings. In no other light can we look on provisions that tend only to the *hygienic examination* of women of loose character. What better purpose can it serve (in a moral point of view), than affording a guarantee to those who sacrifice to their passions, that they shall do so with comparative impunity? It is true, that by such provisions we, as far as in human finality lies, secure subsequent generations from having the sins of their fathers visited on them; but to what extent is incontinence *limited* by their enforcement? Therefore is it, we say, that in the consideration of a question of this nature, such proposals should be entirely ignored; and, having arrived at such a conclusion, it remains for us but to discuss what, in our opinion, naturally falls within the scope of our present subject.

Having thus limited ourselves as to the extent within which our observations are to range, let us consider whether we cannot still further reduce these three classes or orders of proposed remedial measures. If we examine them ever so superficially, we shall find that they can be resolved into two great divisions, viz.: 1st. Remedies for the evil as it exists; 2nd. Measures to prevent its future development; and to either or both of them must all efforts be directed which have for their goal the freeing of society from this universally spread plague-spot. We shall now proceed to submit to a more rigorous examination the several panaceas proposed, as they may occur under either the first or second subdivision; and with a due respect to

seniority, we shall commence with those which propose to deal with the evil as it exists; and as, unfortunately, it but too frequently presents itself to our notice.

The treatment proposed for the evil as it exists may be chronologically arranged into two great epochs, the ancient and the modern; the ancient being exclusively confined to such *mild* measures as characteristic dress; deprivation, both in their own person and that of their offspring, of civil rights; rigid seclusion to particular quarters of the city; the rack, tortures, death in the most painful and formidable manner; and, though last, not least, exclusion from participation in the consolation afforded by the last inmate of Pandora's box—hope: as, the terrors of this world being exhausted, sentence of excommunication was repeatedly pronounced against all who persisted in the evil tenor of their way;—and all this, as but too convincingly demonstrated both by history and our own experience, in vain, all in vain; so that we may fairly argue, no matter how else we are to deal with it, prostitution cannot be controlled by legal interdicts or penal enactments.

When we say that it cannot be controlled, we do not wish to be understood as expressing our conviction that legal enactments may not be rendered subservient to the *abatement* of the nuisance; quite the contrary; as, farther on in this article, we may have to express ourselves in quite a different spirit; all that we mean at present to convey is, that the bloody laws of Draco proved as ineffectual in suppressing the evil in former days, as in more modern times the but too frequently timidly expressed sentiment of public opinion has failed not only in killing, but even in scotching the snake. We only intend our remarks here to have an historic value.

The second plan that has been suggested for treating the evil as its exists is, as we have already intimated, to provide asylums for the reception of those who, having strayed from virtue's path, desire to retrace their steps, and, by their conduct for the future, purpose, as far as in them lies, to atone for the errors of the past. This is a method of treatment open to many alleged objections, prominent amongst which may be stated the following:—First and most important of all, that it is not a true remedy, but a palliative; that it strikes not at the root of the evil, but proposes only a partial, and necessarily a very partial means of meeting what, to be successfully encountered, should be prevented from rearing its head at all amongst us. Second, that it holds out, as it were, a premium to vice, by promising that when, no matter from what cause, distasteful, it should receive a succour to which virtue, in its most stern, tried inte-

grity, must ever remain a stranger. Third, that it is a species of recognition by virtue of vice, a recognition in a perfect state of society not to be dreamed of, and in its present condition, according to such cavillers, wholly undesirable. On these and other such objections, we propose further on to comment. We shall now pass on to those suggestions which have for their object the prevention of the development of the vice in any shape—in fact, its radical cure.

Cultivation of the moral and development of the physical faculties are the two great pivots on which turn every plan that has been proposed for the thorough eradication of this vice from the human mind. It has been suggested that a higher order of education, an expansion of the human intellect, a cultivation of the finer feelings of our nature, can only be attended with a corresponding elimination of the grosser and more animal passions that urge us on to sensual indulgence; and if, along with this, we pay a due attention to the development of the physical powers by athletic exercises, it is argued that we have made a great stride in checking an unbridled indulgence in illicit pleasures. Theoretically, this plan has much to recommend it, but has it proved as successful in practice? Is it not a fact—a fact abundantly proved by the detestable revelations in the work before us—that at no periods of history did the enormities of prostitution in its most glaring degree, in its most offensive and heinous forms, exist, than when literature has been most successfully cultivated, and athletic sports constituted a prominent feature of the spirit of the age? At those periods, if we are to believe the testimony of contemporaneous writers, lust, incest, vice in its most repulsive and bestial form, flourished, and shed their baneful light over every ramification of society. We would wish, however, to be understood as confining these remarks strictly to that form of education which has for its sole object the cultivation of the mental, to the exclusion of the moral faculties of the human mind. Hereafter, in speaking of the remedies that are applicable to this social plague-spot, we shall have occasion to point out the important part that a properly constructed system of education will have to play in the future reformation of society.

Dr. Sanger's work is pre-eminently what it professes to be, a history of prostitution. It is divided into thirty-seven chapters, of which thirty-six, occupying 626 pages, are devoted to a description of the vice, as it existed and exists, both in ancient and modern times. Commencing his history from the first periods of which we have any record, he describes the condition of prostitution as it existed amongst the Jews; the vice

is then traced through Egypt, Syria, Asia Minor, Greece, and Rome. The enormous extent of the evil, and the fearful amount of depravity which prevailed, are but too faithfully placed before the reader; and the efforts made for its suppression and the success which attended their enforcement are carefully recorded. He then pursues, in a similar manner, his subject through the early Christian era, through France, Italy, Spain, Portugal, Algeria, Belgium, Hamburg, Prussia, Leipzig, Denmark, Switzerland, Russia, Sweden and Norway, Great Britain, Mexico, Central and South America, North American Indians, Africa, Australasia, West Indies, Java, Sumatra, Borneo, Persia, Afghanistan, Kashmir, India, Ceylon, Ultra Gangetic nations, Celebes, China, Japan, Tartar races, Circassia, Turkey, Northern Africa, Siberia, Esquimaux, Iceland, Greenland; winding up with a very comprehensive consideration of the subject as it affects the city for whose benefit the investigation was originally instituted—New York. Having devoted such a considerable portion of his work to the description of prostitution, as it existed through all ages, and in every quarter of the globe, but one chapter is devoted to what he is pleased to term Remedial Measures, and these are of such a nature as, in our opinion, entirely to justify us in excluding them from any list intended to present to our consideration what are entitled at all to this appellation; the remedial measures proposed being strictly confined to a system of public surveillance, no other remedy being either suggested or discussed. When we have waded through thirty-six chapters of such historical filth and moral turpitude, and find but one chapter devoted to the consideration of remedial measures, and those remedial measures being confined to suggestions for establishing a system of registration, inspection, and police surveillance, we are tempted to exclaim, with Prince Henry—"Oh! monstrous! but one halfpenny-worth of bread to this intolerable deal of sack!"

That such measures may possess great importance in a hygienic point of view, we are free to admit; that they may even have some tendency to prevent the spread of immorality by checking its undisguised exhibition in all its disgusting nakedness, may be also admitted; but that it can do more may be fairly questioned: and at what a price is such a qualified measure of good obtained?—The implied sanction, by a Christian form of government, of a vice that is most degrading to our nature. In our opinion, the very suggestion of such a remedy is insulting to the gentler sex. What right has any government to assume, as assuredly those do who sanction such ar-

rangements, that women were ever intended by their Creator to discharge such vile offices for man, and to provide, by such regulations, for the indulgence of his passions with greater impunity? No: if it be, unfortunately, her lot to fall so low, let not insult of this nature be heaped on her; at least, not until all other means have been fruitlessly exhausted in the effort to save her. If woman is to become guilty, a thing of shame and sin, let not the character of our British legislation be tainted with even an appearance of recognition of such infamy. Whatever other course we adopt, in our opinion that is not the way to meet this most degrading opprobrium of our present social system. No *one* remedy, we think, no matter how active it may be, is capable of checking this disease; it appears to us rather to call for a combination of measures, and many of these may, at first sight, appear trivial and insignificant; but it is from the united sum of them that we may expect to derive some abatement of what is at all hands now-a-days acknowledged to be a foul-spreading ulcer on the fair face of nature; and we shall now proceed to indicate some of those from the employment of which we would expect good results to flow

As we have already intimated, these measures resolve themselves into two great classes:—First, those which propose simply to abate the nuisance as it exists, and which we shall take the liberty of denominating the palliative treatment; second, those which have for their aim the apparently Utopian idea of its entire suppression, and which we shall, therefore, call the prophylactic treatment. From either of these plans we shall exclude, to a very great extent, all coercive legislative enactments and penalties,—for this reason, that they have been repeatedly tried both in ancient and modern times, and as repeatedly have proved signal failures. Any exercise of civil power for which we plead is to no greater extent, and interferes no further with the liberty of the subject, than we constantly see exercised in cases of a far less flagitious nature. In fact, in any suggestion that we now make, we only claim for the protection of the better disposed of our fellow-subjects the powers that are already vested in our civil authorities, and for the due exercise of which they are at the present moment responsible to the voice of public opinion.

In enumerating what we are inclined to term palliative measures, our readers must bear in mind that our sole object is to *mitigate* the evil as it exists, and thereby produce a tendency to its ultimate obliteration. Were we to be understood as proposing to effect a greater amount of good, many objections might be alleged against our suggestions.

It being assumed, then, that any woman has a right to avail herself of that liberty which the law of England assigns as their birthright to the meanest as to the noblest born of her subjects, and that, should she so think fit, she has a right to become a prostitute, the question arises, to what extent has she a right to push this said liberty? Is she entitled to do so, to the manifest injury of her neighbour, and to the utter subversion of good morals and decent behaviour in the neighbourhood which she frequents? Is it not also the fact that at the present moment women of this class *do* insult all sense of decorum amongst the more virtuous members of both sexes, by assembling in groups in our most public ways, and at the most fashionable hours of the day, and making, as it were, at the same time a public confession of, and glorification in, the nature of their calling and extent of their guilt? and this dressed in gorgeous raiment, with every outward trapping of ease and luxury. What other effect can this have on those of their own sex who witness these exhibitions, and at the moment, perhaps, are waging a fearful contest between want, privation, nay, even starvation, and virtue, on the one hand, and what appears to them to be, on the other hand, wealth and all its concomitant advantages,—to be purchased, alas! it is but too true, at the expense of that virtue of which hitherto they have been so careful and so justly proud, but which, if they are to judge from appearances —from the scarcely half-suppressed greetings of fashionably dressed young men, and the but too frequently audibly expressed surprise and admiration of the seemingly more prudent and well conducted of their own sex,—cannot be of such vital importance to them either here or hereafter? Are we demanding too much on behalf of virtue and its supporters and admirers that women of this class should not be allowed to assemble in groups, to obstruct the pathways, to hustle into the causeway the more respectable of each sex, and thus to exhibit themselves in the most offensive and obnoxious manner? For the suppression of this grievous and intolerable evil all that is required is that the police should put in force the powers at present vested in them, and insist on such characters keeping in motion, and not, by remaining any length of time assembled in groups, obstructing our leading thoroughfares, and outraging every sense of public decency. Now, if this be necessary during daylight, it is still more loudly called for at night. Which of us, whose business avocations call him forth at night, is not familiar with the scenes enacted in our streets after dark? In our principal squares, in our leading thoroughfares, around our public buildings, we find groups of these unfortunates (most of them to a

greater or lesser extent intoxicated), who will not permit individuals of either sex to pass them without insult or importunity, as the case may be. How subversive of morality, how destructive to virtue, how suggestive of vice, such conduct must prove, requires not our feeble pen to depict; and for its suppression we only crave the steady exercise of the powers that are intrusted to our city magistrates and our police force. Surely the liberty of the subject does not demand its vindication by the undisputed exhibition of the most unbounded licentiousness at the hands of these pariahs of society.

The next point to which we think the attention of our police force might be advantageously directed is, to put a stop to the system of *solicitation* at the hands of women of this class. Any woman guilty of this practice should be at once arrested, and at all events for that night Satan would have an emissary the less occupied in doing his work. A few examples of this kind would soon establish a wholesome check on this practice; and how much good would thereby accrue, it would be difficult to estimate. Perhaps the police themselves could speak with greater authority than any other party on this point. That great advantage would attend the enforcement of this regulation we are well assured.

The next prevention, however, to which we would wish to draw attention is one around which some difficulties hang, inasmuch as it has attached to it something of the coercive nature of those restrictions that have been so frequently tried, and that have so frequently failed; it partakes also more of the prophylactic than the palliative nature, but as it is to be applied to the evil as it exists, we introduce it here.

What we now allude to is the license assumed by women of this class, in defiance of all respect for public opinion, of all decency or shame, of exhibiting themselves in our most crowded haunts of fashion on horseback or in open carriages. As long as these are their own property, perhaps we dare not, out of respect for the liberty of the subject, interfere; but when we know that those horses and vehicles are supplied to them on hire by parties who pay license for such privileges, we think, perhaps, that the evil might be indirectly met. Men or women who in a drunken state roll about our streets are arrested, fined, and confined. The publican also will not escape censure, perhaps punishment, who supplies drink to parties who have apparently already transgressed the bounds of sobriety. And why is all this? Is it not as much in the interest of society at large, by checking bad example, as it is for the benefit of the wretched drunkard himself? And why should this corrective measure

be limited to intoxication, a mere personal vice, and not be extended to this public display of the success that attends prostitution and its pursuits? Our idea is, that the licensed proprietors of saddle-horses and hackney carriages should have it intimated to them that the supplying of these luxuries to women of this class is contrary to the spirit in which their licenses were granted them, and that a perseverance in such conduct would be taken into consideration as one of the elements in regulating the renewal of such licenses at future periods. We feel that, in suggesting such a course, we are treading on dangerous ground; but so convinced are we of the evil effects produced by such pernicious, unblushing exhibitions after this fashion of successful infamy, that we cannot refrain from urging the adoption of some such line of conduct on the part of our police authorities. That these suggestions are somewhat of a coercive nature we freely admit; still we maintain that their enforcement can be justified even by high legal authority:—"Sic utere tuo ut alienum non lædas" is a precept as sound in law as it should be in morality; and if the exhibition, for the purpose of eliciting alms, of a child in small-pox be interdicted on that principle of law which holds that "salus populi est suprema lex," why may it not be held equally applicable to that far more disgusting and far more infectious disease, prostitution? Blackstone in his Commentaries lays it down that —"there is an implied assent on the part of every member of society that his own individual welfare shall, in all cases of necessity, yield to that of the community; and that his property, liberty, and life, shall, under certain circumstances, be placed in jeopardy, or even sacrificed for the public good." And if this be not considered conclusive enough, we have Sir Edward Coke on numerous occasions stating, that "nihil quod est inconveniens est licitum." In fact, the entire of our legislation seems to be animated with a similar spirit; and an extension of it in the direction we are advocating would be but in accordance with the principles of the British constitution, as laid down by the most eminent authorities. It would be easy to multiply examples of the poisonous nature of displays of the kind to which we have alluded; we shall content ourselves, however, with one such instance, for the authenticity of which we can personally vouch.

One of the most benevolent, noble-minded ladies of our acquaintance informed us that, one day, some years back, on going into her bedroom, she saw her maid straining out of the window, evidently with her eyes pursuing some person in the street. Stealing gently behind her, to her horror she perceived

that the party so observed was one of our most notorious courtezans, gaily attired, and on horseback. She turned to the young girl, who now, covered with blushes and confusion, stood before her, and, seizing the opportunity of dwelling on the enormity of the vicious practices by which such indulgences were procured, she pointed out in kind, but forcible terms, the price that the wretched creature, even in this world, paid for them, and, in fact, left no means untried to remove the impression which she was quick-sighted enough to perceive that the scene had made on her young protegée. In every argument advanced the poor girl acquiesced; she admitted the truth of her mistress' observations, *but turned to her work with a sigh.* The future history of that poor girl is easily summed up. In a very few months she was *said* to have been seduced —we use this form of phrase advisedly, as, in our opinion, her mind had been polluted from that very day to which we have already alluded—she proved pregnant; emigrated to America; resumed there her vicious courses; again became pregnant; and, in a moment of agony, shame, misery, despair, and, it is to be hoped, of madness, committed, with the assistance of strychnia, the double crime of suicide, and, in the person of her unborn babe, of murder. We ask, in all honour and conscience, at whose door do that poor girl's guilt and untimely fate lie—who, unconscious though she may be of the fact, should be held morally responsible for her vices and her crimes?

Turning from the contemplation of so painful a case, the next question to which we would wish to direct attention is that which has for its object the reclaiming of such women as, alas! have forfeited their claim to their own self-respect, and that of the more virtuous of either sex—which proposes to gather again within the fold those straying sheep—which, in fact, allows a gleam of hope to cast a reviving ray over what must have been hitherto utter, impenetrable, despairing darkness. If it be true, as assuredly it is, for we have it on the authority of one to whom falsehood was a stranger, that "joy shall be in heaven over one sinner that repenteth, more than over ninety and nine just persons, which need no repentance," then, indeed, are they blessed who minister in the cure of our erring, frail sister to her regeneration. Can any reflection be more horrible, more harrowing, to a properly constituted mind, than that one of these unfortunates should be compelled for a single hour to pursue her unhallowed career after she feels a sickening repugnance to her calling—after that her heart is aroused to the sense of the peril in which she has hitherto existed—after that

her soul thirsts for living waters, and that she craves to "go forth and sin no more"? That provision should be made for her present protection and future support, under such circumstances, is but a practical recognition of the truths of Christianity, and, in our opinion, no more has a tendency to foster such crimes than hospitals are likely to encourage people to fracture their legs, or to run the risk of catching small-pox. We also are of opinion that every exertion should be made for the organization of many of such asylums, and that access to them should be of the readiest nature. *Small* institutions favour more careful supervision of each case, more intimate knowledge of the individual character, facilitate the detection of imposture, or the dangerous tendency to relapse; whilst easy access allows us to take advantage of the first glimmerings of conscience, and thereby fosters a feeling which, though in the commencement small as a grain of mustard-seed, may bring forth a tree of goodly stature, bearing the fruit of righteousness. That our views are not extravagant may be inferred from an examination of the Report of an institution founded on these principles in this city. We allude to the Fourth Annual Report of Dublin by Lamplight, for the present year, and from which we shall extract a Table which sums up in one line the past year's progress:—

Refused.	Applied	Admitted.	Emigrated and restored.	Went out.	Dismissed.	In the House.
67	130	63	18	3	15	40

In our minds the salient feature in this table is the fourth column, from which it will be observed that EIGHTEEN unfortunate females have been rescued from a life of sin and shame, have been restored to themselves and to society; or, in other words, that one-fourth of the entire number of the cases under treatment have had a fresh page of life's book opened for them,—a page which we trust, with God's blessing, will not be sullied with any future record of infamy or incontinence.

To those who would suggest our poor-houses as fitting asylums for such of this class as may wish to reform, we would simply reply that they cannot have considered the case at all. Why should the virtuous pauper be subjected to the contamination of such associates? Any one who at all understands the constitution of such institutions, must know well that the admission into them of such characters is as destruc-

tive to the morals of its previous inmates, as it is unlikely to be attended with beneficial results in the reformation of the class for whose use we would wish to see reformatories established; for the treatment of such cases as these, we are of opinion that isolation is absolutely as essential for the patient's welfare as for that of the public.

Having in this imperfect manner given expression to our views as to the remedial measures, or at least a portion of them, that are applicable to the vice *as it exists*, we shall take a hasty glance at what we have ventured to designate the prophylactic means at our command for the abatement of the evil for the future—its entire suppression, at all events as society is at present constituted, being unfortunately, in our opinion, a consummation that is impracticable, no matter how much it is to be desired.

Measures of this kind, to be at all successful, must be directed not only towards the female, but also the male sex; and prominent amongst them for both sexes we would place education, not as we understand it in the ordinary acceptation of the word, and for which we would substitute the term accomplishments; but education on a sound moral and religious, as well as mental foundation. Education that aims only at the *refinement* of the female mind, especially the minds of those that constitute what is termed the lower orders, is but too frequently developed at the expense either of their happiness or their honour, or of both; their sensitive nature makes them shrink from communion with the coarser spirits around them; they crave the society of people of the opposite sex more on an *intellectual* equality with them; then that *besoin d'aimer* comes into play, and so they fall—fall as a consequence of that very measure which originally was intended for their elevation. That we speak not from vague theory, and unsupported by other evidence than our own, we shall prove by quoting from the writings of one whose works do honour to her sex. In "A Woman's Thoughts about Women," we read the following remarkable passage:—

"Another fact, stranger still to account for, is that the women who thus fall are by no means the worst of their station. I have heard it affirmed by more than one lady, by one in particular, whose experience is as large as her benevolence, that many of them are of the very best, refined, intelligent, truthful, and affectionate. 'I don't know how it is,' she would say, 'whether their very superiority makes them dissatisfied with their own rank; such brutes or clowns as labouring men often are! So that they fall easier victims to the rank above them:

or whether, though this theory will shock many people, other virtues can exist and flourish, entirely distinct from and after the loss of that which we are accustomed to believe the indispensable prime virtue of our sex—chastity. I cannot explain it; I can only say that it is so; that some of my most promising village girls have been the first to come to harm.'"

No! education, to prove of service in this cause, must not be of this nature; it must be practical, and above all, it must have its foundation on the Rock of Ages. One of the most remarkable passages in Dr. Sanger's work is that which we shall now submit to our readers, and in which, after having previously given us a fearful picture of Pagan profligacy, he bears honourable testimony to the teaching, in this respect, of our Christian faith, and the fruit which it bore. The passage is as follows:—

"Perhaps the most marked originality of the Christian doctrine was the stress it laid on chastity. It has been well remarked that even the most austere of the Pagan moralists recommended chastity on *economical* grounds alone. The Apostles exacted it as a moral and religious duty. They preached against lewdness as fervently as against heathenism. Not one of the Epistles contained in the New Testament but inveighs, in the strongest language, against the vices classed under the generic head of luxury. Nor can it be doubted that, under Divine Providence, the obvious merit of this feature in the new religion exercised a large influence in rallying the better class of minds to its support.

"From the first, the Christian communities made a just boast of the purity of their morals. Their adversaries met them on this ground at great disadvantage. It was notorious that the College of Vestals had been sustained with great difficulty. Latterly, it had been found necessary to supply vacancies with children, and even under these circumstances, the number of Vestals buried alive bore but a very small proportion to the number who had incurred this dread penalty. Nor could it be denied that the chastity of the Roman virgins was, at best, but partial, the purest among them being accustomed to unchaste language and unchaste sights. The Christian congregations, on the contrary, contained numbers of virgins who had devoted themselves to celibacy for the love of Christ. They were modest in their dress, decorous in their manner, chaste in their speech. They refused to attend the theatres; lived frugally and temperately; allowed no dancers at their banquets; used no perfumes; and abstained generally from every practice which could endanger their rigorous continence. Marriage among the Christians was a holy institution, whose sole end was the procreation of children. It was not to be used, as was the case too often among the heathen, as a cloak for immoralities. Christ, they said, permitted marriage, but did not permit luxury. The early Fathers imposed severe penitences on fornication, adultery, and other varieties of sensuality."

Having thus provided a proper religious foundation, and without which all else will prove vanity and vexation of spirit, we should proceed to raise upon it a fitting educational superstructure, and in the case of individuals of our humbler classes, this should be of the soundest and most homely nature: reading, writing, arithmetic, (it will be remembered that we are still speaking of the female sex) needle-work, familiarity with domestic duties,—an honest preliminary education to fit them to fill that station to which it has pleased the Lord to call them; in fact every effort should be made to educate them in such a manner as to qualify them as servants to discharge their duties towards their employers; and as the poor man's wife towards their husbands. No one can have any idea, but one of our own or of the clerical profession, of the hours wasted from an actual ignorance of how better to employ themselves, by the females of the lower classes, of the squalid filth and misery that pervade their abodes,—all from the neglect of their early education. The boon that would accrue to themselves and their families, were they fitted to assist their toiling husbands in their struggle for their daily bread, is too self-evident to require any further notice at our hands.

Every writer on this subject lays down, as one of the temptations to prostitution, the inordinate love of dress in the female mind. Granting this to be the case, would not such an education as we have here feebly sketched be calculated to abate one contingent of this abominable leprosy. Skilled labour will always prove more profitable than unskilled labour, no matter how energetically put forth the latter may be; and the more useful the members of the more humbly born class of females can prove themselves to be, the better will their services be requited, and the less necessary will it be for them to have recourse to such degrading practices to gratify this taste.

The same arguments apply to this class of prostitutes (more to be commiserated than censured), who have been coerced to such courses in order to support an aged and infirm parent, a dying brother, or, more painful still, to procure bread to stop the cries of a famishing child; human nature must shudder in recording such causes amongst the statistics of prostitution; that such have occurred, is but too true, and the cognizance of such facts should make the moralist blend pity with his disapprobation, and mercy with his judgment.

These and many other such allied considerations should weigh with the notable housekeeper in determining the scale of remuneration that she proposes to adopt for the services of those whom she employs. Few are they who would count it

as a gain of which to be proud, the economy exercised at the cost of a sister's misery. Yet, if they reflect at all, they must know well that it is absolutely impossible to support one human being, much less the family that may be depending on that human being's overtasked exertions, by the stipend but too frequently allotted to them for their day's work. Whence, then, is the deficiency to come? That, depend upon it, is a question that they will have to answer to their own consciences on some future day.

Presuming, however, that we have discharged our duties in these respects to the female sex, are we then *functus officio?* Far from it; man, the tempter, with all his strong passions, his want of self-control, his selfish desire to gratify his lust at any expense, at any cost, remains to be considered; his reformation must be also attempted, or our work is but half accomplished. This task must be commenced in the cradle, and will only be concluded as he quits this world to account in the next for the talents with which he has been intrusted. For, much to the shame of our sex be it stated, that monsters are to be found amongst us whose head indeed, true it is, Time has whitened, but whose soul it has not bleached. Men of this age and temperament are amongst the disgraces of our nature, and the example set by their infamous habits of life is not the least of the wrongs with which they outrage society.

As we have stated, education must commence with their youth; moral precepts should be diligently inculcated; immoral words and acts should be carefully eschewed in their presence, (as indeed they should be at all times), but especially so in the presence of young boys. Well and nobly has the Roman satirist expressed himself when he writes:—

> "Nil dictu fœdum, visuque hæc limina tangat
> Intra quæ puer est."

Whilst thus guarding his tender mind from every possible source of contamination, his bodily vigour should be cultivated with equal care: athletic sports, out-of-door amusements, should be encouraged; but, above all, the strictest sense of respect for woman, in nature of her sex, should be inculcated: he should be taught to reverence her as a higher order of being, and one whose dependent virtue looks up to his for support and protection. No rude word to a little sister, no disparaging remark to a female domestic, should be passed over unnoticed and unchecked; in this way will something approaching to the age of chivalry be restored to our more degenerate times,

and the good it worked, at least in this respect, may be best judged by a perusal of the following extract:—

"A potent influence over the morals of the southern people, the higher classes at least, was exercised by the institution of chivalry. It was of the essence of that institution to promote spiritual at the expense of sensual gratification. The chevalier adored his mistress in secret for years, without even venturing to breathe her name. For years he carried a scarf or ribbon in her honour through battle-scenes and dangers of every kind, happy when, after a lustrum spent in sighs and hopes, the charmer condescended to reward his fidelity with a gracious smile. It is evident that sexual intercourse must have been rare among people who set so high a value on the merest compliments and slightest tokens of affection; nor can there be any question but the effect of chivalry was to impart a high tone to the feelings and language of society, and to soften the manners of all who came within its influence."

Even still our work is as yet but half accomplished. Society owes a duty to itself, and should see to it well that she discharge it becomingly. The ill-doer of either sex should be scouted from her precincts; if any difference is to be made, let it be made in favour of the one who but too frequently is more sinned against than sinning; not as it now-a-days is but too often done in favour of the tempter and the destroyer. Why should the male partner in this infamous breach of one of God's holiest ordinances rear his unblushing front in the midst of matrons and virgins, whose virtue, in the person of some one of them, he has violated and disgraced, and the female partner in his guilt be tabooed and expelled? On what principle is he received in society, with the half-muttered murmur—"that dear, shocking creature, Mr. So-and-so," and his wretched victim be doomed to a *solitary* expiation of a crime in which there were *two* actors? Out upon the hollowness of a world that can bring in such a verdict! Shame on the parents and relatives that can sanction it by their presence!

One more prophylactic measure, and we are done. In the case of a man convicted of adultery or seduction, let all mention for the future of recompense by pecuniary damages be ignored. If he be convicted of such crimes, let them be expiated by confinement and hard labour. We are well aware of the fact that many men, both young and old, are prowling about our large cities, like wolves, in search of what they can devour. Let them, once for all, understand that their appetites can be indulged but at the expense of their personal liberty; that their lustful feelings are, in case of conviction, to

be purged by the sweat of their brow, and the waste of their muscular energy; that in no case, under no circumstances, can the penalty be *bought off*, and we vouch for it that the records of prostitution will be relieved of many of its most painful, its most heartless entries.

In conclusion, we feel that we have but very imperfectly discharged the duty we have attempted in the present article. Our only excuse is, that when we commenced, we had no idea of allowing it to reach the extent it has. A work was submitted to our consideration, involving topics on which we feel deeply, and have thought long. Some of these views we have, in a most imperfect manner, we confess, placed before our readers. On a future occasion it may be permitted us to supply our present deficiencies; till then we can only pray our readers by their kind indulgence to make good our short-comings. All must agree as to the importance of the subject. In treating of it we have tried to do so in a manner that cannot summon a blush even to virtue's cheek. It is true, that immorality has been our theme—but to discuss even such a topic it is not necessary to descend to the use of indecent expressions or immoral anecdotes; and, personally, we are not inclined to yield to any in our reverence for and admiration of the sentiment expressed in the lines of one of the greatest of our poets, when he states that—

> "Immodest words admit of no defence,
> For want of decency is want of sense."

The Urœmic Convulsions of Pregnancy, Parturition, and Childbed. By Dr. CARL A. BRAUN, Professor of Midwifery, Vienna. Translated from the German, with Notes, by J. MATTHEWS DUNCAN, F.R.C.P.E., &c., &c. Edinburgh: Sutherland & Knox. 8vo, pp. 70.

DR. BRAUN'S observations upon the convulsions of pregnancy and childbed, contained in his text-book of Midwifery, were considered by Dr. Duncan of such importance, that, two years ago, he translated this portion of the Professor's work for the Edinburgh Medical Journal. This translation we now have in a separate form, together with notes by Dr. Duncan.

Convulsions, as they appear in the practice of the obstetric physician, are symptoms of the gravest import. Perhaps, with the exception of the worst form of unavoidable hemorrhage, no complication is so appalling as that of eclampsia with parturition.

A distinct treatise upon this subject has been much wanted, and we feel indebted to Dr. Duncan for placing within our reach, by means of his excellent translation, this most valuable portion of Professor Braun's work. We shall endeavour to give our readers a short analysis of this volume.

"Few diseases," says Dr. Churchill[a], "have given rise to such different opinions as to the proper mode of treatment, in consequence, probably, of not distinguishing *the different species* of convulsions." Now we have had convulsions variously classified, thus: hysteric, epileptic, and apoplectic. Again: sthenic, or hyperemic; asthenic, or anemic; and hysterical. Classifications like these may distinguish species, and yet afford us but a doubtful clue to their treatment. We must have a classification that shall be founded upon absolute causality before a resolution into species can be any guide to our treatment.

Convulsions heretofore, for the most part, have been treated, it must be said, rather empirically. All that were not supposed to have their origin in hysteria were treated as hyperemic. By truly tracing out the origin of convulsions, we not only constitute a useful classification, but by that classification afford a system of mnemonics for their treatment.

The author considers that *true* puerperal eclampsia consists in uremia, the consequence of Bright's disease. He concedes that the coincidence of albuminuria and eclampsia has been long since demonstrated; and that this state of albuminuria has been found intimately connected with Bright's disease; that the eclampsia depends not on the presence of urea, consequent upon Bright's kidney, being retained in the blood, but that the urea is decomposed into carbonate of ammonia, which latter intoxicates the nervous centres, and its presence is evinced by spasmodic action.

Eclampsia puerperalis Professor Braun defines to be—

"An acute affection of the motor functions of the nervous system (an acute neurosis of motility), characterized by insensibility, tonic and clonic spasms, and occurs *only* as an accessory phenomenon of another disease, generally Bright's disease, in an acute form (diabetes albuminosus, nephritis diffusa sive albuminosus), which, under certain circumstances, spending its toxemic effects on the brain and whole nervous system, produces those fearful accidents;" and that this disease "may manifest itself in women not pregnant, in children, and even in males, under certain circumstances favourable to it."

[a] Diseases of Women, by Dr. Churchill.

The question arises, are there not other causes of convulsions during pregnancy and parturition besides uremia? Certainly, and the author desires that true eclampsia may be distinguished from that arising from either defective purification of the blood, such as defective elimination of carbonic acid and of bile, &c., and also from cerebral or apoplectic eclampsia, originating in meningitis, encephalitis, apoplexia intermeningealis or capillaris cerebri, thrombosis of the longitudinal sinuses, or hyperemia of the brain, spinal cord, and medulla oblongata; also from those induced by irritation of the terminal nerves, which, by a reflex action on the spinal marrow and medulla oblongata, produce so-called hysterical convulsions; and lastly, epileptic fits.

Hence we may presume Dr. Braun to constitute the following as his classification of convulsions:—Uremic or true eclampsia puerperalis; toxemic from other poisons than that of carbonate of ammonia; hyperemic; anemic; hysteric; and epileptic. So far as we are concerned, it makes little matter to which of these belongs the title of *true* "eclampsia puerperalis." They certainly may, each in their turn, come under our observation in connexion with parturition, and thus complicate that process. It remains for us to find out which of these forms it is we have to combat, and act accordingly. Confining himself to the consideration of uremic convulsions, the author argues that Bright's disease and uremic intoxications are the causes, and not the results of eclampsia, as some have imagined. But the question may arise, how is it that albumen may be found in the urine of the parturient woman, indicative of the presence of urea in the blood, consequent upon diseased kidney; and yet there may be no convulsive seizure. Urea may be in the blood, but it does not follow that convulsions should take place; unless the urea be decomposed into carbonate of ammonia, there will be no convulsions.

"If the fermenting material be wanting, then the blood may be for a long time impregnated with urea, without injurious consequences appearing. In this way the fact is accounted for, that in the bodies of persons dead of Bright's disease, the blood may be found saturated with urea, without any uremic phenomena having been observed during life." "The cause," he continues, "of this fermentation is, as yet, not altogether known."

He then proceeds to examine the connexions between true eclampsia and the pains of labour; and he informs us that "by exciting pains, and increasing their strength, fits cannot be produced at will, nor even aggravated." We have made

the observation, that under a high degree of reflex sensibility, convulsions cannot be induced at will at definite periods by violent irritation of the uterus; and that by the energetic use of the caoutchouc bladder plug, very strong pains may, indeed, be produced, but no increased intensity, and no more frequent return of the eclamptic fits; and that during colpeurysis[a] the convulsions themselves sometimes altogether cease, and the birth of the child takes place rapidly. This is contrary to the general opinion in this country; however, the colpeurynter is an *experimentum crucis.*

The question as to the influence of eclampsia on the life of the fœtus is one of considerable interest. That the mortality of children in these cases is very great, is the experience of every practitioner. How, then, is this accounted for? Some authors, amongst whom was Kiwisch, referred the child's death chiefly to obstructions of the circulation through the placental sinus, but ignored the idea that the fœtus was itself destroyed by eclampsia. From this creed the author dissents for several reasons, such as—

"Convulsive fits, originating in habitual epilepsy, and appearing repeatedly on the same day, never exercise any injurious influence on the life of the fœtus, when albuminuria is altogether absent;" whereas, "after one or two eclamptic fits, it is sometimes found that the fœtal motions have diminished in liveliness, and the fœtal heart-sounds have ceased." "If the mother dies during pregnancy, under uremic symptoms, it is almost always a dead child that is brought to light by the abdominal section." "If after numerous uremic convulsive fits, the child is born alive, a large quantity of urea is found in the blood taken from the umbilical cord; but if it is born dead, we can immediately after the birth demonstrate the presence of carbonate of ammonia in the fœtal blood," &c.

But Dr. Braun does not altogether ignore other injurious influences, such as interruptions of the placental circulation by violent pains in certain cases, pressure on the cord, &c. He does not mention that he has observed, with Simpson, Bright's disease of the kidneys in children born of eclamptic mothers.

The etiology and pathology of uremic eclampsia, and the intimate connexion between eclampsia and uremia, are fully entered into, and the volume terminates with a chapter on the differential diagnosis of uremic eclampsia, and other affections of the motor system of nerves, its prognosis and treatment.

[a] A name given by the Professor to his operation of distending the vagina by means of water forcibly injected into a caoutchouc bag for inducing premature labour. During the operation the bag is promoted, and assumes the title of "colpeurynter."

To distinguish between the various forms of convulsions is of the greatest importance, and this portion of the volume is well worthy of perusal.

With respect to the treatment of uremic convulsions, as laid down by Professor Braun, there are one or two points to which we cannot avoid directing attention.

Inasmuch as the convulsions arise from blood-poisoning, occasioned by the decomposition of urea into carbonate of ammonia, he is in the habit of prescribing—according to Frerichs—benzoic, tartaric, or citric acid, to neutralize the carbonate of ammonia, while, to obviate congestion of the head, he keeps the bowels open by means of jalap, or aloetic purgatives, and vinegar enemata. When convulsions occur during labour, he says, "the chief object to be attained is to diminish as much as possible the reflex excitability, to weaken the paroxysms, in order to diminish the dangers, and to gain time for entering upon rational treatment." To accomplish this, the author employs chloroformization. This state—

"Is to be induced instantly when indications of an impending paroxysm show themselves." "The narcotism is to be kept up until the premonitory symptoms disappear, and quiet sleep follows, a result," he says, "generally attained in one minute." "But if it be not possible to cut short the paroxysm, then the chloroform inhalation is not to be continued during the convulsive attacks and the comatose condition."

Although we can go so far as to corroborate Professor Braun's assertion that chloroform is sometimes certainly of use in puerperal convulsions, so far as it moderates the attacks and gives time, yet we cannot give to it the unqualified praise that we find accorded to it for the treatment of this dangerous malady, in the volume before us. However, Dr. Braun's experience appears to be certainly favourable to anæsthesia, for he informs us, that "in sixteen cases of eclampsia, occurring in succession," which he "treated with chloroform and acids, complete recovery always took place." Ice and cold aspersion are recommended, or the cold douche on the head, for the purpose of moderating secondary congestion. With regard to blood-letting, the author is of opinion that "a general depletion of blood in uremic eclampsia has very seldom any valuable effect on symptoms, and generally produces irreparable injury." Still, there are exceptional cases, for even, according to Braun, "our moderate general blood-letting is not injurious in the case of strong, full-blooded women, when there is violent pulsation of the carotids, and the face continues dark red a considerable time after the

fit." But the routine of using phlebotomy as a panacea against eclampsia, the author considers as a proceeding unjustified by the present state of theoretical knowledge in regard to this disease.

We have given a hasty sketch of this volume: in our opinion it is one of considerable interest, and we strongly recommend it to the profession.

We here take the opportunity of correcting an error of omission which occurred in the review of M. Giraud-Teulon's work on "Animal Mechanics," in our last Number, and to which our attention has been directed by Dr. Matthews Duncan. It appears that the views regarding the mechanical function of the os sacrum, as advanced in that work, had been long previously entertained by Dr. Duncan, who published some papers on the subject in the Edinburgh Medical Journal, in the year 1855, wherein he distinctly assigned to that bone the mechanical office of a reversed wedge. The first essay of M. Giraud-Teulon upon this subject appeared in the Gazette Médicale de Paris, in November, 1856, and about the same time Dr. Imbert, of Louvain, presented to the Royal Academy of Belgium a paper, in which similar views were put forward. According, therefore, to the criterion of publicity, the priority of the discovery to which each of the three has been led is doubtless due to Dr. Matthews Duncan.

Pathology and Social Science: the Irritable Bladder, its Causes and Curative Treatment. By Frederick James Gant, Surgeon and Pathological Anatomist to the Royal Free Hospital, &c. London: Churchill. 1859. 12mo, pp. 136.

Since first we dipped a pen into reviewer's ink, no work has come before us, which has given us greater cause for perplexity as to how we should treat it, than that whose title heads the present remarks. Bearing as its author the name of a gentleman occupying the position that Mr. Gant apparently does amongst our metropolitan brethren, filling the highly responsible position of Surgeon to a London Hospital, and even selected to hold therein an honourable and distinctive position, we cannot reconcile ourselves to class the present production amongst the trumpery catch-pennies issued from the press by the unblushing members of our profession, who, seeking to degrade the science of medicine into the lowest ranks of *trade*, rush into print on some special subject, and,

thereby gaining a bubble reputation, emerge from well-merited obscurity into an ephemeral notoriety, and all for the sake of the (to use a trade expression) *returns* thereby procurable. No; we cannot reconcile ourselves to adopting this view of Mr. Gant's labours; and yet in what other light can they be regarded?

As a true exposition of the state of our knowledge of the pathology, symptoms, and treatment of irritable bladder, for the sake of the reputation of the British school of medicine, we dare not accept it; far less can it be looked on as a work even in the slightest degree advancing our present knowledge of these subjects. Nor can we believe that Mr. Gant himself would wish our continental or transatlantic brethren to look upon his present work as a full record of the amount of information possessed by British surgeons on these points, or even as indicating the extent of his own acquaintance with the disease which he has discussed in its pages. To what conclusion, then, are we to arrive? As we have already intimated, this question is one that perplexes us to answer.

The term "social science" is one which has now-a-days become so familiar, that the adoption of it, even though coupled with the word "pathology," as the heading of his title-page, savours strongly of a hankering after the flesh-pots of empiricism, and in a gentleman occupying Mr. Gant's position cannot be too strongly deprecated; however, further to pursue this theme is so distasteful to our better feelings, that we shall allude to it no further, but proceed with our analysis of the manner in which he has discharged his self-imposed task.

Assuming, then, that Mr. Gant *has* produced his work for the benefit of his professional brethren, we may be permitted to ask him does he hold our mental acquirements in such low estimation as to think it necessary to enlighten us on the meaning of the term "hypertrophy," as he does in the 108th page of his work, where he makes use of the following mode of expression: "Nor can hypertrophy (overgrowth) of the bladder be reduced," &c.? or does he think that, in a work intended to be of scientific character, he is justified, in describing the various urinary deposits, to term them, "white sand, red sand"? or does he, in all sobriety and truth, mean to claim for himself (as is to be inferred from the italicised capital *I* employed) the credit of first pointing out that hysteria is a misnomer, and that in the disease recognised by that name the uterus is not necessarily primarily engaged? or does he feed himself up with the flattering delusion that he is the first and only person who employs saline aperients in the treatment of the acute stage of

gonorrhœa? or does he imagine that he has done much for the cause of humanity suffering from hemorrhoids by the following remarks, which we must be allowed to introduce for the benefit of benighted surgeons?—

"Hæmorrhoids may be accompanied by much pain about the neck of the bladder, with a frequent desire to pass water. I have almost invariably found the following laxative of great service in this distressing condition:—

℞ Potassæ bitartrates (*sic*)
Pulveris sulphuris āā equales partes;
Mellis, quantum sufficit ut fiat electuarium.

"One teaspoonful of this electuary may be taken every night, if necessary; and its beneficial effect aided by the topical application of the Goulard lotion, or by the use of the unguentum Gallæ."

This, as being the only prescription introduced into his brochure, deserves a special mark of recognition at our hands; but we feel assured that any medical student could supply Mr. Gant with a better formulary, extracted from the Pharmacopœias, for *sulphur electuary*. On reading the flourish of trumpets with which the remedy is announced, we must confess that our expectations were exalted in the hopes of getting some valuable suggestions from the Surgeon and Pathologist of the Royal Free Hospital. Alas, however, for the confiding nature of our Hibernian disposition!

Again, we should wish to ask Mr. Gant, is British surgery in that state of outer darkness that it is requisite for him to impress on us the necessity of opening an abscess about the rectum freely and at an early period, or to enlighten us on the difficulties attending its "pointing," and the dangers accruing from a neglect of the proper treatment? The ladies of England may be under a deep debt of obligation to him for his suggestions about the proper treatment of their flowing auburn locks on emerging from the deep (and, even here, we suspect that he has been anticipated by our wild Irish girls); but, on the part of British surgery we assert, that every fact stated by him, in connexion with vesical irritation, is familiar to students of even two years' standing. We appeal from the *author* to the *Surgeon* of the Royal Free Hospital to point out one source of irritable bladder mentioned in his work that is not to be found recorded in any surgical text-book of character; and whilst acknowledging in certain conditions of life the cogency of the remark, "il faut vivre," for ourselves we declare that it shall never be allowed as a plea in abatement for the production of a book without a nobler mission.

A System of Dental Surgery. By JOHN TOMES, F. R. S., &c. London: Churchill. 1859. Fcap. 8vo, pp. 599.

OUR profession during the last half century has exhibited a singular tendency to separate into its component elements, with a view to the more perfect development of its great mission.

It would seem as if the unquiet spirit of revolution which has so disturbed the political, had likewise infected the medical world;—that as in the one case oppressed nations have determinedly broken loose the fetters with which they had permitted *effete* despotisms to bind them; so, in the other, the members of our great faculty, content in earlier times to work all together under the standard of Galen or Hippocrates, have, in a similar spirit of discontent, broken through all restraint, and established separate little realms, in which each rules with undisputed sway, whilst acknowledging a sort of federal connexion with the old commonwealth. Thus have we "pure" physicians, "pure" surgeons, "pure" accoucheurs; whilst numerous petty potentates, content to rule over a single organ, or mayhap over some grave disease, are year by year being born into a distinct and separate existence. Of these it will be sufficient to mention "ophthalmists" and "aurists," "cancer" and "consumption" doctors, "dermatologists," those who control the realm of insanity, "syphylographers," &c.

This disruption of and outgrowth from the parent stock has been most beneficial in its results upon the progress of our scientific knowledge. It has given freer scope for the exercise of the general intelligence, and, by enlarging to a vast extent the basis of the profession, has served to establish it upon a more solid and endurable foundation.

Dental surgery, which may be said to constitute one of these outgrowths, illustrates in a striking degree the advantages of this change. Until a comparatively recent period, its professors, at least in this country and Great Britain, had neglected the extended scientific culture necessary to elevate it to a level with our profession. Without chartered dignity or privileges, they had been content, under the shadow of the favour and patronage of the public, to pursue it, with some distinguished exceptions, rather as a handicraft than as a professional study.

John Hunter led the way, in his able Treatise on the Teeth, to a scientific investigation of the pathology of the dental apparatus; and the great Dupuytren, at the same period, in stating his belief that a large per-centage of the cases of dyspepsia met with in practice had their origin in a disordered condition of these organs, did much to stimulate inquiry.

Our American brethren at an early period entered the great field thus indicated to them, and deserve credit for their efforts to found dental colleges, and otherwise advance the dignity of the profession. Nor were the British dentists backward in the good work. They have long since supplied us with a high standard of periodic literature; and the investigations of Blake, Bell, Tomes, Nasmyth, &c., have thrown much light on our knowledge of dental pathology. We are happy to see that within the last few years, too, they have joined in a united effort to establish themselves as a corporate body; and we doubt not their new College will shortly prove itself worthy to rank with the distinguished one with which it has been affiliated.

Were we disposed to entertain doubts on the subject, the work before us would tend in no slight degree to dissipate them. Emanating from one whose name will be identified as having taken a leading part in the recent organization of his profession, it has the advantage of being all that could be desired in a manual of the art; ably filling a void long felt in general surgical literature, and well calculated to uphold dental surgery in the high position to which it has attained as a scientific branch of the healing art.

The first and largest portion of the work is devoted to an exposition of all that is understood by the term "teething,"—its anatomy, physiology, and pathology. Perhaps no subject in the whole range of medicine is of more importance, owing to the suffering it inflicts, and the great mortality attending it; and none, we venture to say, has had less attention paid to it. From a hasty perusal, we cannot perceive that the author has attempted to resolve our doubts on many leading points connected with this singular process. He seems to have fairly exhausted our knowledge of the subject, whilst guarding himself from giving any opinion on the immediate cause of the various maladies incidental to it, or seeking to explain their mutual pathological relations; about all which, indeed, he candidly admits, our knowledge is as yet but extremely limited.

We quite agree with him in his caution of the practice, extremely common in all cases of illness occurring during the period of the first dentition, of having recourse to the gum-lancet. Whilst we admit that in many cases this simple operation will be followed by the desired relief, it is no less certain that—

"The indiscriminate adoption of this treatment in all cases when the gums are turgid and inflamed will occasionally lead to mischievous results. In children who are enfeebled, either from disease or residence in a bad atmosphere, ulceration of the wounded parts may follow as a consequence of the operation."

A large portion of the work, as would be anticipated, will interest especially those engaged in the mechanical department of the art. The surgical reader will, however, find everywhere scattered throughout matter to interest and instruct him. In the chapters devoted to irregularities in the growth and position of the teeth, which is treated of at great length, we find the following remarks, which we commend to the attentive perusal of our readers :—

"There is, perhaps, no point in the whole field of dental surgery that yields a finer harvest to the charlatan than that afforded by the treatment of irregular teeth. The patients are necessarily young people who have not passed from the care of their parents. There is a great desire on the part of the latter that the teeth should be good-looking, or at least not ill-looking ; at the same time, there is great unwillingness, both with the patient and the parent, that the treatment should be extended over a long period of time. The presence in the mouth of a mechanical apparatus pressing upon the teeth interferes with the comfort of the young patient, and the frequent attendance at the house of the dentist encroaches upon the hours allotted for study. Both circumstances render prolonged treatment irksome ; impatience is shown, the instructions are neglected, and, as a natural consequence, the results fall far short of those which might have been obtained had the treatment been consistent. I believe it is in accordance with the experience of those who have devoted their attention to the treatment of irregularities, that where the front teeth have been brought in by mechanical means, and where mechanical means are required to hold them in place until they become permanently fixed, the treatment must be continued for twelve months. It may not be necessary that the apparatus should be constantly worn for the whole period, but it cannot be wholly thrown aside. Towards the latter part of the time it may be worn occasionally only ; but even after the lapse of twelve months, should the teeth show any indication of movement from the desired position, mechanical restraint must be resumed."

And again he tells us :—

"It is very necessary that this part of dental surgery should receive far more consideration in an anatomical and physiological point of view than it has hitherto done. In the absence of precise knowledge upon the subject, there is room for great disparity of opinion as regards treatment, leaving a wide and very productive field for the cultivation of the charlatan, who sees in every case of irregular disposition of the teeth an opportunity for mechanical interference, in some cases securing to himself a large fee for doing by means of mechanism that which Nature would have effected, had the opportunity been allowed ; and in other cases submitting the patient to a long course of treatment which entails no useful result."

We may here add, that the cases adduced by the author in proof of the efficacy of well-conducted pressure in remedying deformities of this kind are exceedingly instructive as showing to what a great extent the regulation of the teeth is under our control in early life.

The chapter devoted to the pathology and treatment of caries of these organs contains many useful hints to the general practitioner. Our eye, for example, lights upon the following observations, interesting in connexion with the very general practice of stuffing decayed teeth with wool or cotton steeped in anodyne or astringent liquids, with the view of giving relief:—

"In examining the circumstances under which the decomposition of the dentine takes place, and under which it is resisted, apart from the influence of vitality, any one must be struck with the power that is exerted by the mere form of the surface involved. Supposing the disease to be situated in a deep fissure, or upon the side of a tooth, against which another tooth is placed, the decomposition will go on with more or less rapidity, the rate being varied in accordance with the condition of the oral fluids. But if the cavity be superficial, and so placed that it is subject to friction during mastication, the progress is usually relatively slow; and if the low walls of such a cavity be removed, the part will become polished by the act of mastication, and by the motions of the tongue, and decomposition will be completely arrested, quite independently of any power of resistance exercised by vital action. Again, let a tooth be placed under circumstances the opposite of the preceding. For example: take a bicuspid of the upper jaw, the distal surface of which is decayed, and remove the softened dentine; then let dry cotton wool be forced between the defective tooth and its neighbour, and renewed only once in three or four days; at the end of a fortnight or three weeks it will be found that the surface of the cavity which was left hard and dense after the first operation, has become soft, and that the softening extends to a considerable depth. Had the cotton, prior to its introduction between the teeth, been dipped into a solution of any resinous gum, such as mastic, the surface of the cavity would have remained unaltered, owing to the exclusion of moisture. But where wool only is used, the secretions of the mouth are not only not excluded, but are held in constant apposition with the exposed dentine by the saturated wool."

The author treats lightly the employment of electricity in dentistry, either for the purpose of destroying the dental pulp by means of the platinum wire brought to a white heat,—for which purpose he prefers to use arsenic,—or with the view of preventing by an electric current the pain felt in extraction. Our experience of both these "Yankee notions" would lead us

to differ somewhat from the author, especially with regard to the platinum wire, which we frequently employ with the best results. With respect to the anæsthetic influence of the electric current, about which we have heard and read so much of late, we confess our experience would induce us to recommend further investigation. Undoubtedly it has seemed, in our hands, in many cases to have produced a perfect insensibility; but we are bound to say, it has quite as frequently failed when employed in other cases, under the like circumstances.

We regret that we cannot at present dilate at greater length upon the merits of a work which we highly recommend to the profession. To the library of country practitioners especially it will be an invaluable addition. Liable as they are to be more frequently appealed to in cases of dental pathology than their brethren in the large cities, where specialists abound, they will do well to fortify themselves by acquiring the extended acquaintance with the subject this work will afford them.

We would especially remind them, in the words of the author, that—

"No portion or organ of the body, either in health or disease, can be independently considered. Whether an inflamed eye or a diseased tooth form the subject of inquiry, it must be borne in mind that neither can exist but as one of many parts which collectively form the body; that the healthy condition of an organ is due to a corresponding state of the whole organism, and more especially to a sound condition of the organs in its immediate vicinity, or with which it is closely associated; and that a state of disease may be consequent upon, or even a symptom of, a disordered state of a neighbouring part of the body. On the other hand, a diseased condition, originating in an eye or a tooth, may induce sympathetic affections even in remote organs, and in doing so may seriously disturb the general health. It is necessary that the mutual dependence of the various organs upon each other should be fully acknowledged by those who restrict themselves to special branches of practice, and who naturally feel a strong tendency to isolate and place in an independent position, and to give an exaggerated importance, to the diseases of the one organ or set of organs to which their attention is more especially directed."

Memoirs on Diphtheria, from the Writings of Bretonneau, Guersant, Trousseau, Bouchut, Empis, and Daviot. Selected and translated by Robert Hunter Semple, M.D., with a Biographical Appendix by John Chitto, Librarian to the Royal College of Surgeons. London: The New Sydenham Society, 1859. pp. 407.

Amongst the many remarkable things to be noted in the annals of our profession, we hold it to be not the least remarkable circumstance that, in a science of observation, as, more or less, medicine undoubtedly is, a disease will arise, spread, and exist for ages, die out, and almost be forgotten, reappear, be described as a new disease, its etiology be misunderstood, its pathology incorrectly described, its treatment, as a natural sequence, be established on uncertain data,—until the appearance of a master mind, who, studying the symptoms of to-day by the light of the records of past ages, recognises the identity of the two affections; by laborious toil in the dead-room establishes on correct data its pathology, and, availing himself of the experience of the past, with the increased light shed on medicine by the advanced position occupied by science at the present, directs its treatment on rational principles, and, as a consequence, is by many looked on as the original discoverer of a new disease, though such be not the case. His only claim is to have described that which has been known for centuries, but to have done so more in accordance with the position that, at the present moment, pathology should occupy amongst scientific physicians. Such is the history of diphtherite, and such is the relation held to it by the distinguished physician of Tours.

For the present collection of papers on this subject we are indebted to a new Society that has started up amongst us,—"The New Sydenham Society"—a Society that, in our opinion, seems to have adopted for its motto, *de facto*, if not *de jure*, Deeds not Words, this being the third volume already this year presented to its members; the first volume, Diday on Infantile Syphilis, has been lying on our table for some time, and a review of it should have appeared in the current Number of this Journal, but, considering its subject to be of so important a nature, and that the intrinsic merits of the book itself demand more space than we can spare to it at present, we have postponed its appearance until our November issue, when we promise our readers a full analysis of one of the ablest works that has yet appeared on this most intricate subject. In the mean time, we can only wish success to a society that has inaugurated its career in so auspicious a manner.

Amongst the series of papers now before us, far the most prominent position is allotted to M. Bretonneau's memoirs on Diphtheria—in fact these, five in number, constitute fully one half of the volume; and, taking into consideration the advanced position in reference to this disease occupied by this learned and zealous physician for considerably more than a quarter of a century, we consider that the post of honour has been justly conceded to his deservedly acknowledged supremacy. To our minds a great charm is thrown around this gentleman's writings by the mixture of earnestness, frankness, and simplicity, by which they are characterized; thoroughly imbued with the importance of the views that he advocates, he never for a moment seems to be ashamed to put on record the errors he unintentionally fell into in his search after truth. An air of candour seems to pervade all his writings on the subject, and he appears to have written with but one sole motive in view, the establishment of correct views about this disease, based on the only sure foundation—sound pathological investigation—and on these to raise up a superstructure of rational, and, because rational, successful treatment. As an example of these statements, we shall extract the very first case he has put on record:—

"Case 1.—A child, five years old, healthy, and of good constition. Coryza, rather severe pain of the ear, which was relieved after the appearance of a serous discharge through the auditory canal. For two days only there had been slight pain in the throat; deglutition was so little affected that the child supped in the evening with its parents, and with its accustomed appetite. The third day the throat appeared to be obstructed, and on examination of the back of the mouth, at eleven o'clock, A.M., large grey spots were seen covering the tonsils, the bases of which were red and swollen. Eight leeches were applied to the sides of the neck, and produced an abundant flow of blood; and kermes mineral was given in emetic and repeated doses. There was a hoarse cough, with alteration of the sound of the voice; in the evening there was aphonia, extreme fetor of the breath, a blackish-grey tint of the eschars which extended over the whole surface of the pharynx; frequent and small pulse; dyspnœa, lividity, and sinking, which terminated in a peaceful death during the early part of the night. It appeared to me very evident that death was caused by gangrene of the back of the mouth; but I asked and obtained permission to make inquiries into the extent and true seat of disease, which had had so rapid and fatal a termination.

"*Necropsy.—External appearance.* Body stout; lividity; tumefaction of the sides of the neck. *Internal appearances, observed eight hours after death.*—The velum palati was of a blackish-grey

tint, as far as the height of the palatine arch; the putrid decomposition of the surface of the tonsils appeared still more advanced; the eschars extended from the guttural opening of the nasal fossæ as far as the commencement of the œsophagus; they penetrated into the glottis, where they assumed a dull-white tint. Their margin was marked by a bright-red line. The mucous membrane of the trachea exhibited no trace of inflammation; a small quantity of mucus was accumulated near the bifurcation of the bronchi. This gangrenous alteration, which had extended with so much rapidity, had gained so little in depth, that the velum palati, divided from before backwards, presented a vermillion section between two grey lines, which were quite superficial. The fetid odour exhaled by the patient had ceased to be perceptible after death.

"It was impossible to make a more imperfect investigation. To what a degree may prejudice blind the judgment! The prepossession in favour of the existence of a gangrenous affection prevailed over evidence. Although no excuse can justify the want of attention in so severe a case, where everything demanded the most accurate investigation, some circumstances may at least explain the hurried nature of this autopsy, which was made in the middle of the night, in a confined place, and under the eyes of parents, whose sorrow inspired me with the fear that I had already carried my zeal for science too far.

"Doubt was the first result of this case. Indeed, how could gangrene be limited to such slender surfaces, and deviate in this respect from its habitual character? A disposition which was so peculiar to this epidemic affection required a new and especially a more severe investigation. There was reason to fear that the occasion would not be long wanting, for it was observed that the number of those who were dying of Gangrenous Angina was daily increasing. Children were particularly attacked by it, and at this age the disease appeared to be transmitted by contagion."

Another charm about M. Bretonneau's writings is the graphic manner in which his cases are described. The reader is irresistibly interested in their success or failure; his sympathies are all enlisted on behalf of the poor sufferers, and he alternately triumphs or mourns as the result proves fortunate or otherwise. The first case in which M. Bretonneau successfully employed tracheotomy, that of Mademoiselle L. de Puységur, may be quoted in illustration of this statement; and we should not envy the feelings of that man who would not participate in the feelings that must have throbbed in M. Bretonneau's breast on restoring to the father, already bereaved of three children by this insidious disease, the fourth subject of it, after a prolonged struggle with death, and only saved by the skill, judgment, and dexterity of her medical attendant.

The symptoms of diphtherite are by this time too well

known to our readers, and too ably described in the numerous memoirs that, both in this country and abroad, have appeared on the subject, to render it necessary for us to reproduce them here in detail; however, we should not be doing justice to our subject did we not allude to a sign laid down by M. Bretonneau in his fifth memoir, dated 1855, as pathognomonic of Nasal Diphtheria; we shall reproduce here his own words:—

"Under these circumstances, a minute and attentive vigilance is imposed upon us. When the Egyptian disease prevails and is propagated with the intermittent march which characterizes its irregular outbreaks, and when, from one year to another, it has raged so extensively as it has been seen to do in Paris within the last six years, it is incumbent on us not to wait for visible symptoms; but at the least sign of snuffling, at the slightest indication of coryza, to *feel* and not to *look* beyond the angle of the lower jaw, below the lobe of the ear, and thence down the sides of the neck. If in this region we should find any swollen lymphatic glands, our attention should be redoubled, for if we feel a glandular swelling, it is more than probable to be a consequence of the absorption of the Egyptian virus.

"Do not be satisfied with this examination, for it is necessary that the diagnosis should leave no doubt; examine, therefore, the upper lip below the nostrils; in the most simple coryza the skin is reddened *equally* under each nostril, while in the case of the Egyptian disease it is *only* on the side of the glandular swelling. If the swelling exists on both sides, it is unequal; on the side where the swelling is least, the redness of the lip of the same side is least. From the period of this discovery, we are certain that there is a special affection, in fact the Egyptian disease.

"Then let me advise you to act instead of talking, and with a glass syringe, the padded extremity of which ought to be yielding and incapable of causing pain, inject into the nostrils alternately a solution of nitrate of silver, and although the injection may flow back through the nostril which has not been injected, it will be well that the latter should also receive an injection of suitable strength, if, on the corresponding side, there is the least swelling of the cervical glands."

M. Guersant's memoir is devoted principally to that form of diphtheria represented by croup. He takes very proper objection to the confounding true with false croup, a mistake, we fear, but too prevalent even at the present day; the former, the pseudo-membranous pharyngo-laryngitis, a most formidable disease, characterized by the formation of the diphtheritic membrane; the latter, the laryngismus stridulus, never presenting this complication. From his statistics we are entitled to augur

favourably for the success of the operation of tracheotomy in this disease, he stating that—

"Out of one hundred and seventy-one cases of *post-mortem* examinations in Croup, one hundred and fifty exhibited false membranes in the air-passages, and there were seventy-eight in which these false membranes were confined to the trachea, and only forty in which they penetrated to the bronchi. This result is very favourable, as will be perceived, to the success of tracheotomy."

But it is to the memoirs of MM. Trousseau and Bouchut that we are principally to look for important details respecting this operation. The advocates for tracheotomy in croup will derive some additional arguments to strengthen their position from the summary of M. Bouchut:—

"Although the success of tracheotomy is not very striking, yet the results are such as ought to encourage its adoption by a physician placed in charge of an infant half asphyxiated by Croup. On the one hand, M. Bretonneau, in twenty operations, saved six children; out of one hundred and sixty, I have saved forty-five. M. Leclerc of Tours, who has adopted the same treatment, reckons one favourable case in two operations. M. Velpeau has cured two children in ten. M. Pétel of Cateau Cambresis, who has followed the same system, has performed successfully three operations out of six which were operated upon. Thus out of one hundred and ninety-eight cases of tracheotomy we reckon fifty-seven cases of success; that is to say, rather more than a fourth."

The principal line of treatment advocated throughout all the memoirs is cauterization, performed either with strong hydrochloric acid (as urged by M. Bretonneau in his earlier memoirs), or with nitrate of silver. Emetics, mercury, and, when symptoms of asphyxia seem *imminent*, but previous to their development to any great extent, the operation of tracheotomy. Depletion, by the abstraction of blood, objected to by both MM. Trousseau and Bretonneau as being worse than useless, is admitted in exceptional cases by M. Bouchut; and when locally performed by the means of leeches applied in relays, as the urgency of the symptoms demands, is spoken highly of by M. Daviot. M. Bouchut, on the contrary, prefers general blood-letting to leeches, stating that, in children, the operation of venesection is more easily performed than the application of leeches—a statement in which we are not inclined to concur. He also alludes to the difficulty of stopping hemorrage from leech-bites in the neighbourhood of the neck—a difficulty which, we think, has been much overrated. It is true that, in the neighbourhood of the trachea, you have no *point d'appui*

on which to make pressure, but we always have it in our power to pinch up the leech-bite in a fold of the loose integument, and make pressure on it between our fingers; or, if a more protracted compression become necessary, we can easily extemporize a most effectual instrument, by employing a pair of small spring forceps, to be found in every surgeon's case, to open which it is necessary to press them. Envelope their extremities in a little pad of lint, to prevent their injuring the soft structures in this neighbourhood; press the blades; the extremities divaricate; grasp the bleeding leech-bite with them, and allow them again to approximate by simply removing the pressure, and, from practical experience, we can promise our readers that they shall have no more trouble from the leech-bite. Since we have commenced employing this plan we never have had recourse to nitrate of silver, ligature, needle, or any other manœuvre recommended for the arrest of hemorrhage from this cause.

All forms of moist applications, in the shape of poultices, fomentations, &c., are deprecated as being worse than useless; purgatives also are not in favour; but blisters are especially indicated as being a fertile source of mischief, the blistered surface invariably developing pellicular inflammation, in other words, cutaneous diphtheria,—a subject, whether occurring in this manner or as an idiopathic affection, is always to be looked on as most serious, and to which full consideration has been given in more than one of these memoirs.

It remains now for us but to express our opinion as to the manner in which Dr. Semple has discharged the duty of selecting and translating these memoirs. Whilst admitting that those he has selected are of great interest and importance, we think that, on the principle of "audi alteram partem," he would have better consulted the interests of his readers, and at the same time rendered fuller justice to all parties, had he incorporated with the present memoirs some of those by equally distinguished authorities, in which a different line of treatment from that suggested in the present volume has been advocated. We would instance Lemercier, an advocate for active bleeding; Baron, the suggester of the alkaline treatment; Gigot, also a supporter of the alkaline plan of treatment, and an opponent of the use of caustics; Stiles, Heslop, and Haughton, supporters of the plan of treatment by muriated tincture of iron; Hutchinson and others, suggesters of the employment of chlorate of potash, &c., &c. As to the manner in which he has translated his authors into English, it has been done in such a manner as even to entitle him to the unqualified thanks of the writers

themselves, presuming that their knowledge of the English language qualified them to be judges. We never have met with a translation so faithful which has so little the appearance of being one.

The work concludes with a most admirable bibliographical account of the disease, from the date of Bretonneau's first memoir on the subject up to the present year,—an account that bears equal testimony to the extent of his information as to the immense amount of industry and research expended on its preparation by its author, Mr. Chitto.

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1. *Om Puerperalfebers Diagnose og Behandling.* Ved Dr. F. C. Faye, Professor i Medicin ved Norges Universitet, Overlæge ved Fodselsstiftelsen og Bornehospitalet i Christiania.

   On the Diagnosis and Treatment of Puerperal Fever. By Dr. F. C. Faye, Professor of Medicine in the University of Norway, Principal Physician to the Lying-in Institution, and the Children's Hospital in Christiania. Reprinted from the Norsk Magazin. 8vo, pp. 126. 1859.

2. *Partus Præmaturus—Embryotomie.* Ved Dr. F. C. Faye, &c. &c.

   Premature Delivery—Embryotomy. By Professor Faye. Reprint. 8vo, pp. 8. 1859.

3. *Discussioner om Medicinalstyrelsen i det medicinske Selskab i Christiania i October, November, og December*, 1857.

   Discussions respecting State Medicine held in the Medical Society in Christiania in October, November, aud December, 1857. Reprint. 8vo, pp. 77, with Appendix, pp. 20. 1858.

4. *Forelöbig Beretning om et nyt Middel til Fostrets Mutilation.* Af Cand. Med. Valentin Heyerdahl.

   Preliminary Account of a new Instrument for Embryotomy. By Valentine Heyerdahl, Cand. Med. Reprint. 8vo, pp. 12. 1854.

5. *Om Chloroform, og dens Brug ved Fodselshjælpen.* Af Val. Heyerdahl, Cand. Med.

   On Chloroform, and its Use in Midwifery. By Valentine Heyerdahl, Cand. Med. Reprint, 1859. 8vo, pp. 64.

The present contribution of the learned Professor of Medicine in the University of Norway to the diagnosis and treatment

of puerperal fever was elicited by a discussion on that subject which took place, chiefly in his absence, at meetings of the Norwegian Medical Society. After some preliminary observations, the author describes the condition of the Christiania Lying-in Hospital. This building, which was erected at the cost of the State, had been for about eight years used as a general hospital, when it was in 1837 converted into an exclusively obstetrical institution. Many circumstances combined at that time to render it unfitted for such a purpose. In a small out-building were eight privies for the entire of the Royal Hospital, so that the soil gradually became saturated with urinous and excrementitious fluid.

The cellars of the main building were used as dead-house, residence of messenger, and store for various articles,—many of which latter were spoiled by damp. The drainage was imperfect; and accordingly, on several occasions, a large collection of water took place. In consequence of the space occupied by the stairs and a large corridor, there were on the ground floor only two wards, with five beds in each, and a small lying-in room between them. The construction of these rooms was such as to render thorough ventilation impossible. Immediately adjoining the lying-in room, and approached only through the latter, was a dark, ill-ventilated closet, where worn-out mattresses and those not in present use were stored. The yard was and still is enclosed by a circular wall and buildings. In one end was a badly constructed sink, where various fluids, but none excrementitious, were emptied. In the second story sanitary arrangements were so far good that a corridor ran between the wards, and admitted a thorough draught of air, though ventilators were not employed. Under such unfavourable circumstances, the use of the hospital as a lying-in institution commenced in the spring of 1837. In 1839 the sickness and mortality were tolerably great; and in 1842 it was necessary to remove to the empty apartments in the Royal Hospital, as the mortality from epidemic and endemic influences was so considerable that even among the patients in the second story 5 in 47 died, being in the proportion of 1 to 9·4.

After the lapse of six months, patients were once more admitted into the lying-in institution; but in 1845 it was again thought right to remove to the vacant wards in the Royal Hospital, where the prevailing type of disease might have less influence, and where the sick might be successfully treated under Hr. Steffens, then appointed Physician-in-chief. On the latter office Professor Faye entered in 1846; and, at his suggestion, and under his direction, efforts were now made, at the cost of

the Storthing, to render the institution what it should be, especially as it was to serve as a school for physicians and midwives. The hospital was enlarged by the addition of new wards; ventilators were introduced into the old; room was made on the loft and in the yard for the stores; stoves for drying and disinfecting were introduced into the cellars, and the kitchen was transferred to the latter. The second story was enlarged; the privies were removed from the out-house, the foundation of which was dug out to a considerable depth, and new apartments were arranged in it for the school of midwives and for parturient women. Before these arrangements were complete in 1849, the practice during the three preceding years had been favourable, although the cases of sickness of a prevailing inflammatory type were many, and particularly in 1847 were very violent, under the form of peritonitis. Opiate treatment internally, in combination with other and particularly external means, then appeared so efficacious, that the author began to think this plan capable of general application.

At the close of 1849 the Institution was again in action, and the wards now received a smaller number of beds. Nevertheless, it was the lot of this hospital to undergo, in 1850, an epidemic of puerperal fever, which certainly also attacked with tolerable severity parturient women through the city, but was so particularly violent in the Institution as to lead to the inference that special endemic influences must still be in operation there. The opiate treatment was now inefficacious, and the author subsequently obtained better results from the immediate employment of calomel and quina, with brisk purgation. The hospital was now again accurately examined, and it was found that the air from the kitchen in the cellar, passed directly into the school of the Institution, and it was thought that this impure air formed a favourable medium for the miasmata. The kitchen was now again moved up stairs, all constant communication with the cellar was cut off, and a better system of ventilation was adopted in the latter. The sink was removed beyond the wall of the yard, and a proper system of drainage was adopted around both the main and auxiliary buildings, and the children's hospital.

After some excellent observations on the formidable nature of puerperal fever, Professor Faye enters at considerable length into the subject of its treatment. Opium, quina, and iodine are among the medicines on which, according to circumstances, he appears to place the most reliance.

The author gives an elaborate chapter on the mortality of puerperal women. It appears that, during eight years in

Christiania, there died of parturient women of the higher classes 1 in 35·3, while in the trading and operative classes the proportion was 1 in 54·6. The proportion of deaths in the Lying-in-Hospital, during twenty years, was 1 in 34, nearly 3 per cent. From 1845 to 1857, the mortality in the hospital was, among patients occupying single-bedded rooms, 1 in 81; among those occupying the common wards, 1 in 44.

We have, in the foregoing paragraphs, alluded merely to those points in Professor Faye's excellent essay which contain most special information likely to be interesting to our readers. Puerperal fever is, unfortunately, of too frequent occurrence in this country to render it necessary to follow him through the details of his observations on its diagnosis and treatment.

2. The second pamphlet on our list contains the history of a case in which, on account of narrowness of the pelvis, premature labour was induced, with mutilation of the head and trunk of the fœtus.

3. The discussions reported in the third of the above works are not of sufficient interest to the British reader to render it necessary that we should give an abstract of them in our pages.

4. Dr. Heyerdahl commences his essay, which was originally published in the Norsk Magazin in 1854, by expressing his satisfaction that, in the present state of science, embryotomy is more rarely employed than was formerly the case. At the same time he adds that, when properly indicated, it is fully justifiable as an indispensable and rational means of saving the mother's life.

The object of Dr. Heyerdahl's pamphlet is to introduce to the notice of the profession a plan, devised by the author, for separating the parts of a fœtus, by means of a sawing motion with a cord of hemp or fine metallic thread. The intention is chiefly to avoid injury to the organs of the mother. Cases are detailed to show that, by such means, the dismemberment can be rapidly effected.

5. Dr. Heyerdahl's remaining pamphlet contains a very complete and interesting history of the use of chloroform in midwifery, with practical directions for its employment.

PART III.

MEDICAL MISCELLANY.

TRANSACTIONS OF THE COUNTY AND CITY OF CORK MEDICAL AND SURGICAL SOCIETY[a].

(*Continued from* vol. xxvii., p. 490.)

SESSION 1858–59.

MAY 26, 1859.

DR. O'CONNOR, PRESIDENT, in the Chair.

Case of Labour during Typhus. By WILLIAM CUMMINS, M.D.—"The complication of any of the malignant blood diseases, such as scarlatina, typhus, &c., with the puerperal condition, is generally and truly regarded as so extremely dangerous to life as to warrant a most unfavourable prognosis in all such cases. As an exception to this general rule, I wish to place on record, in a brief communication, the following case:—Mary Sullivan, aged 35, when in the ninth month of pregnancy, had the misfortune to contract typhus fever from her child. On the fifth day a few rose-coloured spots appeared on the chest and abdomen, and the disease ran its course without unusual complication, but requiring a liberal allowance of wine, until the twelfth day, when labour commenced with a moderate sanguineous discharge from the vagina, and slight pains. About three hours after I was called to her, and found her mottled all over with dark, rose-coloured maculæ; teeth covered with sordes; tongue brown and dry; perfectly rational, and complaining of the pains. The scalp had been shaved, and she had lately had some sleep; urine in tolerable quantity; pulse 120, feeble; vagina soft, cool, and relaxed; os uteri nearly dilated, cool and natural; sanguineous discharge still continues moderately. The membranes were rup-

[a] These Reports have been furnished to us by Dr. S. Henry Hobart, Secretary to the Society.—ED.

tured, and a tumbler of punch administered in divided doses; after a few hours the labour process terminated naturally, without a single unpleasant symptom, the child being born alive, but feeble; it survived two days. The mother required abundant stimulation, and an occasional opiate, with little other treatment, and that of the most ordinary kind; no bad symptoms appeared; and in ten or fifteen days she began to convalesce, and was soon perfectly restored; there was no secretion of milk, and the lochia were scanty. I was truly surprised to find, on making my vaginal examination during labour, that the uterus and vagina were the only parts of this poor woman not affected with the calor mordax of fever; it seemed as if a special Providence was watching over the parts most exposed to danger; as if Nature, with her accustomed vigilance, would not allow the dread disease to triumph uncontrolled over the double life; and truly it was wonderful to find, that when all the energies were prostrated, the essential uterine power was found equal to its task; and that while every organ, every function of the body, was impaired during a period of twelve days, the fœtus in utero was not left unprovided, and was brought into the world in a condition capable of surviving two days, although the natural source from which it should derive nutrition, after expulsion, was dried up."

Dr. Cremen read the following Report on the Exanthemata for the year 1858:—

"1. The exanthemata which occurred in Cork and its vicinity for the year 1st December, 1857, to 30th November, 1858, from the returns made by ten dispensary physicians, as well as from numerous other sources, were, with very few exceptions, extremely mild in character, and, as regards numbers, much below the average of previous years. Scarlatina and measles did not exceed 100 cases, while of small-pox there were only 14; with the exception of one case of the latter disease in my district, small-pox presented only in the neighbourhood of Glanmire; in May there occurred five cases, June 3, July 2, and August 3.

"2. Scarlatina was mild in type, and, as a general rule, not followed by anasarca; under my own observation, several cases of severe cynanche tonsillaris presented themselves, in some of which the pharyngeal mucus was engorged; some of these arose in localities and in houses in which scarlatina had existed or was present, in which no redness of the skin showed itself, though carefully looked for. Anasarca followed in some of these, and was slow in removal.

"3. The same remarks apply to measles, in regard to number, and type as to small-pox and scarlatina; the cases were isolated and scattered throughout the year; in some of the cases the bronchial symptoms were severe; no fatal cases are reported.

"4. Cases of erysipelas and varicella were exceedingly few.

"5. The exemption from exanthemata epidemic during the year may, I think, be referred to the fact that the virulence of the

small-pox and scarlatina poison seems to have exhausted itself in the epidemic of the winter of 1855 and 1856; to the increase of vaccination; to the facility of obtaining medical relief; and to the improved condition and habits of the poorer classes."

Dr. Cummins read his Report on Ague for the same period, viz.:—

"With a view to ascertaining particulars regarding ague during the year 1858, circulars have been addressed by your Secretary to all practitioners holding public appointments in the city and county of Cork; to these, fourteen replies have been received, eight from the city and its immediate vicinity, and six from the county, the latter being for the most part from the rural districts within six or eight miles of the city. 917 cases of ague have been recorded, 625 in the city, and 258 in the county. The details are as follows:—

Fever Hospital, ...				73
South-eastern	City	Dispensary District,	Dr. Fowler, .	214
North-western	City	,,	Dr. O'Flyn, .	16
Ballygarven	County	,,	Dr. R. Fowler, .	0
Blackrock	City	,,	Dr. Cummins, .	105
Glanmire	County	,,	Dr. Tivey, .	28
Blackpool	City	,,	Dr. H. Hobart,	26
Between Rivers	City	,,	Dr. Humphreys,	17
Carrignavar	County	,,	. . . . .	1
Blarney-lane	City	,,	Dr. Cremen, .	88
Blarney	County	,,	Dr. Lee, . .	34
Ballincollig	County	,,	Dr. Rountree,	154
Passage	County	,,	Dr. Johnson, .	41
St. Luke's	City	,,	Dr. Armstrong,	120

"From this it would appear that the South-eastern (City), St. Luke's (City), Blackrock (City), and the Ballincollig (Rural), Districts have suffered most from the disease; and in each of these, with the exception of St. Luke's, local miasmatic sources of the disease are to be found. Now, it is remarkable that almost all the cases of ague in the Blackrock District appeared in the village of Ballintemple, situate on the borders of the so-called 'Park,' and that while ague has been far less prevalent in Ballintemple during 1858 than it was the preceding year, it has increased on the St. Luke's Hill, situated on the other side of the river, but evidently indebted to the Park for the miasma which produces ague.

"The character of the disease has been much the same as last year, and it has, generally speaking, yielded rapidly to quina, but with a great tendency to relapse. Altogether the facts brought before your Committee tend to bear out the suggestion made in last year's Report, that ague may be an *epidemic* disease, and that marsh miasma may have only the same relation to it as a *disposing cause* that animal putrifying matters have to epidemic typhus."

"During the months of January, February, March, and April, 60

cases of maculated typhus occurred in my district, which is generally remarkably free from the disease. The epidemic, for so it may be called, was sudden in appearance, and equally abrupt in its departure; and it is a remarkable fact that not a single case appeared in the village of Ballintemple, where ague has been a perfect plague during the last few summers; while it was most prevalent in the Blackrock village, which has hitherto enjoyed perfect immunity from ague. What are we to infer from this fact? Are we to consider it a simple coincidence? Or, is there an antagonism between the causes of the two diseases? Further observations are necessary to decide this point, but it certainly is in favour of the latter view, that since ague appeared in Cork and its vicinity, typhus has been much below the average. The cases of typhus which I have alluded to were generally free from complication, but required a liberal supply of stimulants, and free circulation of pure air; the latter being the most important point in the treatment; next to it was constant and careful sponging of the skin; and last, though by no means least, an opiate at the right moment. Minor particulars had, of course, to be attended to, according to the symptoms of each individual case; but, on the whole, little medical treatment was necessary.

"Only three cases consented to go to the Fever Hospital; and of those who were treated in their own houses, only one died, and he had been much neglected in the commencement of his fever."

On a New System of Respiratory Therapeutics; or a Method of rendering Medicated Liquids respirable by Pulverization. By Dr. Sales-Girons.

The author proposes to render medicated liquids, such as saline or ioduretted solutions, tar-water, &c., respirable in a state of minute subdivision, or, as he terms it, of powder. The superiority of the method over the ordinary inhalation of vapour is stated to consist in this, that by means of it *fixed substances* can be conveyed in solution directly into the respiratory passages. The following is a description of the instrument, by means of which he effects this object.

Description and working of the Pulverizing Instrument.—This apparatus, represented in action in the annexed woodcut, may be defined as an instrument in which the compressed fluid finds exit by a hole in a capillary stream, which stream, meeting an obstacle at a little distance, is broken up, and reduced to the state of spray.

The whole apparatus is composed of—1, of a vessel A, containing about a quart (litre) of fluid, without being quite filled with it; 2, of an air-pump in the interior, indicated by the dotted lines; the

handle B of the piston is seen above the vessel; 3, of a gauge C, exhibiting the pressure produced on the liquid within; 4, of a tube

rising from the bottom of the apparatus to F, where the fluid finds exit through the capillary hole, and meets a little disc, on which it becomes reduced to a sort of thick vapour, which is observed to be directed against the nose and mouth of the patient.

To put the apparatus in action it is filled to three-fourths or four-fifths with the prescribed fluid, and the handle P of the piston being raised and lowered, as much air is accumulated on the surface of the liquid as may be necessary to make the gauge indicate a pressure of three atmospheres. The cock D is then opened, and the fluid is projected from the body of the instrument through the tube, with the pressure of these three atmospheres, equivalent to a column of water of about ninety-eight feet, and is expelled through the capillary hole with a velocity proportioned to that pressure. It will be easily seen that, as the velocity of the stream of fluid is considerable, it will, on meeting, at a distance of about an inch and a half, a small, resisting disc, be broken up, and so form the liquid dust or spray.

But this subdivision, which reduces cold water to the state of

vapour, which is also cold, must be seen to convince one that it is possible to render a liquid of a temperature below 50° F. more easily respirable than vapour.

When the pressure is diminished in consequence of the discharge of the fluid, a few strokes are given to the piston B, and the pressure of three atmospheres is maintained.—Condensed from the *Bulletin Général de Thérapeutique, Feb.* 28, 1859, p. 161.

On the Fibrous Bands of the Pericardium. By Professor H. LUSCHKA, of Tübingen.

IN directing attention to this formation, which has hitherto completely escaped observation, I must first make some remarks upon the so-called fibrous lamina of the parietal portion of the pericardium, with which it is closely connected.

In childhood I find the fascia endothoracica in the form of a very insignificant layer of areolar tissue, effecting the attachment of the pleura; in adults, on the contrary, it is everywhere very strongly developed, and especially, as Hyrtl correctly remarks, towards the vertebral column. As I have on another occasion observed, this fascia derives considerable strength from the three inferior intercostal spaces, in consequence of the accession in this situation of tendinous tissue from the oblique abdominal muscle. I shall take another opportunity of showing that auxiliary fasciculi also join its tissue from the sternum.

The portion of the fascia endothoracica lying beneath the diaphragmatic division of the pleura is easily isolated in adults, especially if the preparation has lain for some time in diluted alcohol. We can, moreover, satisfy ourselves, from the examination of any dead body, that the section of the diaphragm which is not covered by the pleura, in front of, and posterior to, the pericardium, is invested with a comparatively thick fascia. On carefully separating the diaphragmatic fascia, we find regularly here and there a transition into its tissue of tendinous fasciculi, derived from superficial muscular fibres.

The diaphragmatic section of the fascia endothoracica passes from all sides to the periphery of the pericardium. Its textural elements run for the most part arranged as flat, firm, tendinous-looking fasciculi, in a longitudinal direction *over* the outside of the pericardium, and here give rise to a membranous layer presenting split-like deficiencies. The smaller number of its constituents pass *under* the pericardium, and therefore over the centrum tendineum; but they also form a membranous stratum, which effects the connexion between the pericardium and diaphragm, being usually less firmly attached to the latter than to the former. This is corroborated by the observations of A. Portal[a], who in one case met a collection of fluid be-

[a] Cours d'Anatomie Médicale, tome iii., p. 5. Paris: 1803.

tween the pericardium and the diaphragm, and has often found a large quantity of fat in the same situation.

From these statements it would appear that the fascia endothoracica, on arriving at the diaphragmatic border of the pericardium, divides into two laminæ, one of which passes over, the other under the pericardium. In the periphery of the division a very firm attachment takes place, rendering the separation of the pericardium particularly difficult, in consequence of a number of tendinous fasciculi of the diaphragm, instead of passing into the centrum tendineum, uniting in various modes with the fibrous tissue passing over the pericardium. So soon as this intimate connexion, involving the periphery of the adherent portion of the pericardium, is overcome, the further separation of the sac can usually be accomplished, even in adults, without much difficulty.

In infancy and early childhood the pericardium can with the greatest ease be separated from the diaphragm, in consequence of the portion of the fascia endothoracica connected with it still consisting of a layer of soft areolar tissue. The latter subsequently becomes denser, and most of its elements assume a more tendinous character in proportion as age advances. It would almost appear as if the extension of its tissue, connected with the motions of the heart and diaphragm, in the course of years caused these changes in its qualities.

The tendinous tissue of the pericardium does not, when the membrane is reflected to form the visceral layer, turn into the latter, but is continued into the adventitious coat of the large vascular trunks, and particularly on the wall of the aorta. This fact is worth attention in reference to the explanation of certain pathological phenomena. Thus in a case of rupture of the ascending aorta which I examined, the pericardial sheath of the vessel was, as well as over this, the adventitious membrane of the artery, strengthened by that tendinous tissue, separated and distended prior to the irruption of the blood into the cavity of the pericardium, like a purse, as far as the origins of the arterial trunks given off from the convexity of the aorta.

Into the constitution of the fascia pericardii, structures also regularly enter, which we must designate as *fibrous bands* of the pericardium, or, so far as they take their origin from the sternum, as *ligamenta sterno-pericardiaca.*

Writers have in general stated that the pericardium and the sternum are connected only by a loose, partly adipose, areolar tissue. It is now some time since my attention was arrested by an arrangement I observed between the xiphoid cartilage and centrum tendineum[a]. This was a tendinous streak, which I provisionally termed ligamentum sterno-diaphragmaticum, because I was of opinion that it was derived from the tissue of the anterior extremity of the cen-

[a] Joh. Müller, Archiv für Anatomie und Physiologie, p. 337. 1857.

tral tendon of the diaphragm, and was inserted into the upper extremity of the posterior surface of the xiphoid process.

I have on several occasions paid attention to this subject, and not only obtained a clearer view of the nature of the part in question, but have also been led to the discovery of another analogous structure. Thus it appeared that, normally, *several* fibrous cords proceed from the posterior surface of the sternum, and are lost at the anterior part of the circumference of the pericardium in the tendinous layer of the latter. They are not always equal in number and in the degree of their development; but since I first became aware of their existence, I have never failed to find them. The points at which they pass into the pericardium are frequently plainly perceptible, so soon as the anterior thoracic wall has been removed in the usual mode. On attentive observation, a greater or less amount of roughness will be perceived on the anterior surface of the parietal pericardium, in a situation corresponding to about the middle line of the sternum, whence tendinous fasciculi radiate in a fan-shape over the sac. A clear and instructive view of the matter is, however, to be obtained only by removing the anterior thoracic wall from the right margin of the sternum (as the bands are for the most part attached a little to the left of the mesian line), separating the right anterior mediastinal wall, and carefully examining from this side, through its whole extent, the areolar tissue contained in the anterior mediastinum. The observer will soon fall upon isolated tendinous striæ, and be able to trace them through the loose areolar tissue, on one side to the membrana sterni posterior, on the other to the pericardium. I have hitherto seen such fibrous cords arise from three points.

Most constantly I found a flat, tolerably extensible ligament, of tendinous lustre, everywhere abounding in elastic fibres, arising from the posterior surface of the base of the xiphoid process. This ligament lay over the sternal portion of the diaphragm, with which it was connected by adipose areolar tissue, and proceeded in a more or less oblique direction upward, having previously separated into several bundles, to spread out in the fibrous lamina of the pericardium. The ligament is, on an average, a little under an inch in length, and is four millimetres (0·15748 inch) in breadth. We not unfrequently find that it assumes its fan-like expansion from the inferior boundary of the pericardium, presenting an appearance as if its fasciculi ran into the anterior border of the central tendon. Closer examination, however, leaves no doubt that its terminal expansion takes place not here, but upwards on the pericardium.

A second origin of a sterno-pericardial ligament I have often found, although by no means regularly, on a level with the sternal ends of the third pair of ribs. The ligament was in this situation: shorter, slighter, divided into several bundles, and was inserted into the pericardium towards the middle of its anterior periphery. A third, variously developed, fibrous stripe I have traced downwards

from the upper extremity of the xiphoid cartilage to the middle of the superior third of the pericardium; this ligament, consequently, followed a course exactly opposite to that of the inferior sterno-pericardial ligament. I had formerly repeatedly observed that tendinous striæ in the anterior mediastinum could be traced into the tissue of the fibrous lamina of the pericardium, but not to the sternum; while, on the other hand, they have distinctly proceeded from the side of a lamina of the anterior mediastinum, turned towards the mediastinal cavity, and may evidently be considered as derivatives of the fascia endothoracica.—*Henle und Pfeufer's Zeitschrift*, 1858, Bd. 4, 1 und 2 Heft., p. 102.

On Acute Yellow Atrophy of the Liver. By Dr. HEINRICH WALLMANN.

A HORSEMAN, aged 22, was treated at the Dispensary for a gangrenous sore in the right scapular region, which was stated to have occurred spontaneously. The patient complained only of the suffering caused by the sore; subsequently his skin assumed an icteric colour, shiverings came on, and he died, with pyemic symptoms.

At the post-mortem examination I found acute yellow atrophy of the liver, closing of the cystic duct, and narrowing of the ductus choledochus from cancerous cicatrices; blennorrhœa of the gall-bladder; scirrhus of the right supra-renal capsule; œdema of the glottis; gangrenous sore in the right scapular region; general dropsy. The liver was adherent to the diaphragm; its substance was soft and doughy, almost fluid, and was of a grayish-yellow colour. On chemical examination leucin, sugar, and several fats were found.

A second case of acute yellow atrophy of the liver occurred in a soldier, aged 23, otherwise in good condition, but presenting icteric discoloration of the skin. On post-mortem examination scirrhus of the stomach, medullary cancer of the abdominal lymphatic glands, ascites with anasarca, and tumour of the spleen, were found. The liver was enlarged, hard, of a yellowish-brown colour, studded with biliary infarctions. The surface of the liver was rough and thickened; the biliary passages were filled with thick pus, and the gall-bladder with inspissated, viscid, black bile. On chemical examination in the laboratory of Joseph's Akademie, were found leucin (in great quantity), taurin, tyrosin, sugar, and several as yet undetermined fatty matters.—*Virchow's Archiv*, Bd. 14, Heft 1 and 2, p. 204.

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OF

MEDICAL SCIENCE.

NOVEMBER 1, 1859.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XII.—*Eight Cases of Ovariotomy. With Remarks on the means of diminishing the Mortality after this Operation.* By T. SPENCER WELLS, F. R. C. S., Lecturer on Surgery at the Grosvenor-place School of Medicine; Surgeon to the Samaritan Hospital, &c.

AN impression appears to prevail that some of the advocates of ovariotomy have published their successful cases, and have not published those which have terminated fatally. I therefore state at once that the eight cases which form the subject of the present paper are the only cases in which I have performed this operation. In one other case I made an exploratory incision, and did not proceed with the operation; but, as the progress of the disease was not affected by this incision, which healed without any ill effects upon the patient, who died four months afterwards, from spontaneous rupture of the cyst into the peritoneal cavity, it would not be right to include that case in the list of ovariotomy operations. I allude to it here, however, as I made the exploratory incision in December, 1857; and I believe that this, and a case I saw some months before with Dr. Snow Beck, where iodine was subsequently injected, were the first cases in which it was proposed to divide the pedicle of an

ovarian tumour by means of the écraseur. I had long regarded the ligature on the peduncle, and the sloughing of the stump within the abdominal cavity, as one of the most frequent causes of death after ovariotomy. In cases where the peduncle is long, this danger can be avoided by fixing the stump outside the wound; but where the peduncle is short, the écraseur offers evident advantages. It was used in America, soon after the publication of my suggestion, by Dr. Atlee, who, on the 23rd of March, 1858, separated a pedicle one inch in length by four in breadth, in a lady sixty-one years of age, without loss of blood, and the result of the operation was completely successful. The practice has been followed up in America, for Dr. Pope relates four cases of ovariotomy in the St. Louis Medical and Surgical Journal for January, 1859, in two of which the écraseur was used to divide the pedicle.

I now propose to offer a short account of the eight cases in which I have performed ovariotomy, appending a few remarks to each case, and then make some suggestions as to the means of diminishing the mortality after this operation.

CASE I.—*Multilocular Ovarian Cyst, tapped seven times; twice injected with Iodine; rapid increase; Ovariotomy; perfect Recovery.*

A single woman, twenty-nine years of age, was admitted under my care into the Samaritan Hospital, on the 9th of February, 1858. She had been a general servant, and was in good health up to the age of twenty-one; she then began to complain of pain low down in the left side, extending to the loins; but she did not discover any tumour until five years later. The tumour increased gradually for a year, and, two years before she came under my care, she was admitted into Guy's Hospital, under the late Dr. Lever, and tapped. After six months she was readmitted, and tapped again; and a third time, after an interval of thirteen weeks. She went to Lambeth Workhouse in June, 1857, and was tapped there four times by Mr. Bullen, at intervals of about two months: the fluid discharged each time averaging about two gallons. Undiluted tincture of iodine was injected twice, but without the slightest benefit; on the contrary, the cyst appeared to fill faster than before.

On admission to the Samaritan Hospital it was evident that her health was rapidly giving way under this repeated accumulation and discharge of two gallons of fluid; but as she was cheerful, her constitutional power moderately good, and she earnestly desired to be relieved, at any risk, of a disease which made her life miserable, I decided, after consultation with my

colleagues, to extirpate the tumour. I performed the operation on the 19th of February, 1858. I first made an incision three inches long in the linea alba, carrying it downwards from an inch below the umbilicus, and thus exposed the cyst, which was adherent to the parietes. After separating some of these adhesions, I emptied the principal cyst through a large trocar. Several secondary cysts were then felt, and the adhesions to the abdominal walls on either side were also found to be very firm and extensive. Some doubt was here expressed as to the propriety of proceeding further, but I felt that it would be more dangerous to stop than to proceed, and accordingly broke down some very firm and extensive adhesions by passing the hand between the abdominal wall and the cyst. In this stage Mr. Baker Brown, who was present, afforded zealous assistance. A slighter adhesion of the upper part of the cyst to the omentum was also broken down by the hand. The peduncle was on the left side, and of the breadth of three fingers. I transfixed it in two places, and tied it in three portions by whipcord ligature. The peduncle was so short that it could not be fastened in the wound. The right ovary was examined, and found to be healthy. The ligature passed through the lower part of the wound, and was carefully fixed to the skin by adhesive plaster. The edges and sides of the wound were brought accurately together by superficial and deep silk sutures, and the abdomen supported by a broad flannel bandage. The patient was under the influence of chloroform for forty minutes. She suffered from nausea and vomiting during the two following days, due, it appeared, rather to the chloroform than to the operation; or, perhaps, to the opium, which was given from the first to keep her free from pain. She had no sign of peritonitis at any time, but suffered a good deal from flatulence; and the pulse was very rapid and feeble for many days. Wine was given freely from the first. There was a very copious fetid sero-purulent discharge from the abdomen, through the portions of the wound kept open by the ligature on the peduncle: on two or three occasions, when the opening became plugged accidentally, the patient complained of a good deal of pain, and became feverish, but immediate relief was afforded by a free discharge of fluid after cleaning the ligature. The wound united by first intention, except for about half an inch where the ligature passed. The bowels were not open until the tenth day, when they moved spontaneously. The ligature around the peduncle came away on the twelfth day, with a large slough attached to it. From this time the patient gradually improved. She became an under-nurse at the hospital; and in the autumn became the sole and general

servant in a twelve-roomed house. Here she remained until early this year, doing a great deal of hard work, when she was induced to emigrate to Australia. Just before she embarked, Dr. West kindly examined her for me, on the 25th of January, 1859, and wrote as follows:—"As your patient was menstruating, I could not make any vaginal examination; but through the abdominal walls there is no trace of tumour perceptible; and there can be no doubt but that the case has been a complete success."

The cyst weighed, with its contents, twenty-six pounds The contents consisted of the ordinary viscid fluid, containing many granular cells. The principal cyst formed the upper part of the tumour. The lower part consisted of a number of smaller cysts, which had filled the pelvic cavity, and were moulded to its form. Most of the cysts appeared to have been developed independently of the principal cavity, and independently of each other; small scattered cysts may be seen in different parts of the largest cavity, but these are all developed in the substance of the fibrous wall, and were covered by the serous layer extended over the largest cyst.

Remarks.—Looking to the strong fibrous partitions between the principal and the smaller cysts composing this tumour, it is quite evident that no fluid injected into the large cyst could reach the smaller cysts. Hence the important practical deduction, that success can only be reasonably hoped for from iodine injections, when an ovarian cyst is simple or unilocular.

Case II.—*Multilocular Ovarian Cyst, tapped three times; Ovariotomy; adhesions to Liver; perfect Recovery.*

A married woman, thirty-eight years of age, was sent to me in July, 1858, by Mr. Ottaway, of Dover. She was married in 1851, and has had three children, but no miscarriage. She was in good health up to the birth of her last child, two years and four months before I saw her. She then noticed that the abdomen did not diminish in size so much as after her previous confinements; she could not say when she first perceived any distinct tumour, but the swelling of the abdomen gradually increased after her confinement, until March, 1858, when Mr. Ottaway tapped her, and removed eighteen quarts of clear, thin fluid. The sac filled again rapidly, and Mr. Ottaway tapped a second time early in June, removing seventeen quarts of a thicker fluid. It was six weeks after this tapping when she came to town, and she was then becoming oppressed by the quantity of fluid. The catamenia had been generally regular, but had

not appeared for eleven weeks until the day she came to town. Owing to repairs going on at the hospital, it was impossible to admit her, and, as she became much distressed in her breathing by the rapid accumulation of fluid, I tapped her at her lodging, on the 15th of July, and removed fourteen quarts of thick fluid. When the sac was empty, I felt some small outgrowths from its right wall: they were attached to the abdominal parietes.

The sac refilled rapidly, and, as her general health was pretty good, although she was suffering from the rapid accumulation of fluid in the cyst, and was very desirous of having the cyst removed, although the danger of the operation was fairly put before her, I performed it, after consultation with my colleagues, on the 11th of August, 1858. As I was very anxious to avoid vomiting after the operation, she took ice for two hours before it; and Dr. Richardson administered a mixture of one part of chloroform to six parts of ether instead of pure chloroform. I had hoped to be able to complete the operation by a small incision, but the separation of the cyst from its attachments was rendered difficult by adhesions between the cysts and its coverings,—so intimate that it was not easy to make out the exact line of separation between them,—and it was only after enlarging the incision and cutting into the cyst, that this could be made out accurately. Then the irregular outgrowths from the right wall of the cyst just alluded to were found to consist of an aggregation of small multilocular cysts, which were firmly attached to the under surface of the liver and the coats of the gall-bladder, and it was, of course, necessary to be extremely careful in completing the separation. The peduncle was tied by strong twine, in four separate portions, each the breadth of a finger, and the portion left was long enough to be fixed between the edges of the wound. The wound was carefully closed by hare-lip pins, the lowest pin transfixing both edges of the wound and the peduncle, so as to prevent its sinking into the abdomen. The cyst weighed one pound five ounces, and the contents twenty-nine pounds ten ounces.

The patient slept well at night, and, on the day after the operation, said she did not feel so ill as she had been after her labours. A one-grain opium pill had been given every three hours, but, on account of nausea and occasional vomiting, a morphia suppository was substituted for the pills. The urine was removed by the catheter thrice daily.

On the third day a spontaneous diarrhœa set in, but soon subsided. The wound united by the first intention; the pulse

ranged from 120 to 140 until the eighth day, when it was down to 100 for the first time; she then sat up in bed, and did some needle-work.

On the ninth day the peduncle had completely sloughed through, except at one spot, which I secured by a fresh ligature, and removed the old one with the slough. She only had a suppository twice a day at this time.

The new ligature on the remnant of the peduncle came away on the tenth day, and from this time she rapidly regained strength; the wound soon closed, and she left the hospital three weeks from the day of operation.

Mr. Ottaway, of Dover, saw her on the 2nd of February, 1859, and, in a letter to me, says, he "found her over the wash-tub, where she had been all day." He adds: "She tells me that she is 'as well as ever she was in her life, and much better than she has been for many years past;' that 'she does the whole of her household work, and minds her children without help; that she occasionally walks to St. Margaret's Bay and back, a distance of seven miles, without unusual fatigue; and, in fine, that she could not wish to be better.' She looks cheerful and animated, and, from being a sallow, emaciated, unhealthy-looking being, has now the appearance of a person in robust health, muscular and strong. She has menstruated fairly only once since she left the hospital. At the beginning of November she had an appearance, for a day only; since that time, not at all; and as the mammæ are becoming more full, attention will be directed to the possibility of her being pregnant," an event not at all impossible, as many cases are recorded where women have borne several children after the extirpation of an ovary.

Case III.—*Ovarian Tumour and Ascites; removal of a Tumour weighing twenty-one pounds, and fifty-seven pounds of Ascitic Fluid; Recovery.*

A married woman, aged 33, was admitted under my care, in the Samaritan Hospital, on the 1st of November, 1858. She was married ten years before, and had four children, and one miscarriage between the first and second child; the youngest child was three years old, and all her children were living. She was quite well up to her last labour, but did not diminish in size after it. Two months afterwards she began to complain of pain just above the symphysis pubis; and about a year ago first felt a hard movable tumour in this situation. Rapid increase followed. The catamenia had been regular,

though scanty, up to the end of May; since then they had ceased.

On admission she appeared extremely weak and much emaciated. She was fifty-seven inches in girth at the umbilicus, and thirty inches from the ensiform cartilage to the symphysis pubis. She could only sleep in a sitting posture. The heart and liver were displaced upwards; the skin of the abdomen was fissured, and marked by large veins and varicose lymphatics; the enlargement was quite equal on both sides, and there was the bulging outwards of the flanks characteristic of ascites; perfect fluctuation was felt equally in all directions over the abdomen; the abdomen was generally dull on percussion, but a clear note showed that the stomach and intestines were lying in the epigastric and right lumbar regions principally, and also in the left lumbar region. The situation of dull and clear sound was not altered by any position of the patient. No tumour could be felt by the deepest pressure the patient could bear. The anterior wall of the vagina was depressed; the uterus admitted the sound for three inches, but the organ was not so freely movable as in the normal state. It was felt to be impossible to say positively if there was ascites (with distention so great that the intestines could not reach the abdominal wall, or were bound down by adhesions), or a large simple ovarian cyst; but, taking the positive statement of the woman as to the previous existence of a hard movable tumour, the most probable supposition was, that an ovarian tumour was surrounded by a large quantity of ascitic fluid. As the line of clear sound on percussion in the epigastrium descended about an inch and a half on full inspiration, it also appeared probable that any tumour was unattached anteriorly.

As the woman placed herself entirely in my hands, after the danger of the operation had been explained to her, I decided, after consultation with my colleagues, to make an exploratory puncture, evacuate the fluid, and then, having everything prepared for ovariotomy, perform it or not according to circumstances.

On the 5th of November, accordingly, after the usual preparations, and chloroform having been administered by Dr. Priestley, I drew off fifty-seven pints of thin, turbid serum. A very irregular lobulated tumour was then felt; on exposure and puncture by the trocar, its contents were found to be too thick and glutinous to escape, even when an incision was made into it. It became necessary, therefore, to enlarge the incision sufficiently to admit of the removal of the tumour entire. This was done, and the incision then reached from about an inch

above the symphysis pubis to two inches above the umbilicus. Superiorly and posteriorly there were adhesions to the omentum and small intestines. These were easily broken down; but one around the brim of the pelvis was separated with more difficulty. The peduncle was on the left side, very short and broad; it was secured between the blades of a metal clamp, and the tumour was then cut away. There was then very considerable hemorrhage, which at first appeared to come from one end of the peduncle; but, after securing this by a ligature, the bleeding was still unchecked and alarming, and the source was discovered to be a rent in a very large vein on the right side, running along the brim of the pelvis. I caught the sides of the rent with a toothed forceps, and put on a lateral ligature, so as to stop the hemorrhage without also stopping the current of blood in the vein. The abdomen and pelvis were then carefully sponged clean of blood. The right ovary was examined and found to be healthy. The wound was brought together by nine hare-lip pins and twisted suture; the peduncle and clamp being kept outside the wound.

The progress of the case, after operation, was almost uninterruptedly one of recovery. There was neither pain, thirst, nor sickness; the chief complaint was of flatulence; the pulse ranged from 120 to 130 for a fortnight, and then gradually sank to 110 and 100; the pins were removed on the fifth day, and the wound was found quite healed, except at the spot where the peduncle and ligature passed; the clamp came away on the eighth day, and the ligature on the vein on the ninth; on the tenth day the bowels acted three time after an enema of warm water. From this time she rapidly gained strength, and left the hospital exactly four weeks after the operation, the heart and liver having returned to their normal situations.

The treatment consisted in the use of morphia suppositories, and of sufficient nourishment and stimulants; no medicine was given by the mouth: a third of a grain of morphia was given in suppository at first, three times a day, afterwards only twice, and it was discontinued after a fortnight. The urine was removed by the catheter three times a day for the first week, but she passed it easily as soon as the bowels were open.

The tumour, as removed, some two or three pints of its contents having been previously emptied, weighed twenty-one pounds. The external capsule was firm, fibrous, and very vascular; section showed an immense number of imperfect cysts or alveolar cavities, from the size of a pea to that of a small apple, and one large cyst which had contained from two to three pints of viscid fluid. The walls of the cyst and alveoli

were very vascular, enclosing a semi-opaque, jelly-like substance, varying in colour from white to dark chocolate in different places, and in consistence from that of firm jelly to that of white of egg. By a little pressure this matter was made to exude easily from the divided cavities. Thus the tumour might be described as a fibrous net-work, forming irregular cavities containing gelatinous matter. After maceration and squeezing out the contents, the septa were seen to form very imperfect separations between the cavities, and the skeleton of the growth was so far identical with that of colloid or alveolar cancer. Microscopical examination of the viscid, tenacious contents led to the belief that it was not true colloid. A great abundance of molecular matter was seen with free nuclei, and small oval or rounded cells, about the diameter of blood corpuscles; also numerous large granular corpuscles, from two to three times the diameter of blood corpuscles, and an abundance of oil globules. It is a question, however, whether the distinction between the compound ovarian cyst (or multilocular ovarian tumour, or pseudo-colloid disease of the ovary) and true colloid disease, is as well made out by any observation of minute structural difference as in the clinical history; especially in the important fact that the former disease shows no tendency either to reproduction in distant parts of the system or to contaminate neighbouring parts or glands.

This patient has been heard of several times since she returned home, and the accounts were for some time most favourable. Mr. Jardine, of Capel, near Dorking, who sent her to me, wrote, on the 3rd of February, 1859, saying that he had not seen her lately, as she had gone twenty miles off for a week or two, but he adds, "her husband tells me that she is getting stout, and has very good health. She was weighed three weeks ago, and had gained fifteen pounds since leaving the hospital." She continued strong and robust until the summer, when she began to suffer from some intestinal obstruction.

Case IV.—*Multilocular Ovarian Tumour; Ovariotomy; Death thirty-two hours afterwards.*

A single woman, thirty-nine years of age, was admitted under my care to the Samaritan Hospital, on the 4th of January, 1859. She had been quite well until between two and three years before. In the autumn of 1856 she first began to complain of pain in the left groin. This increased, but she did not notice any swelling until May, 1857, when a tumour was discovered on that side, which had steadily increased in size up

to the time I saw her. She was always "regular" before this, and up to the end of 1857, when the catamenia ceased, and have not appeared since. In October, 1858, she had some temporary œdema of the legs, and the growth of the tumour has been more rapid since. She has lost flesh lately, and is somewhat emaciated, but the complexion is healthy; she suffers a good deal at times from pain in the abdomen and flatulence, and is very breathless on any exertion; otherwise in pretty good health. The abdomen was filled by a large tumour, reaching from the pubes to half-way between the umbilicus and cruciform cartilage. Below the umbilicus it was divided by a sulcus which gave the impression of their being two tumours, and, of the gentlemen who examined the case with me, about half inclined to the belief of there being two, and the remainder thought there was no evidence of there being more than one multilocular tumour. Fluctuation was distinct, but limited to several small spaces. The fact of the catamenia having entirely ceased for a year was thought to favour the view of both ovaries being diseased. Vaginal examination showed that the uterus was atrophied, and somewhat raised from its natural position. As she was very short-breathed at times, Dr. Graily Hewitt examined the chest, and reported the heart to be healthy, and the lungs also, but that the right lung was compressed considerably by the elevation of the liver and diaphragm.

Taking into consideration the rapid growth of the tumour, its multilocular character, its effects upon the general health, and the hopelessness of any other mode of treatment, I decided, after consultation, to agree to the earnest wish of the patient to have the tumour removed, a wish expressed after full explanation of the dangerous nature of the operation. It was delayed for ten days on account of an eruption of herpes on one side of the chest, but, when this had disappeared, I performed the operation on the 21st of January, 1859, precisely as in the former cases, and after the same preparations. There were no adhesions, nor any fluid in the peritoneal cavity, but from one to two pints of viscid fluid flowed from a very thin-walled cyst, which was lying close to the linea alba. The incision extended from two inches above the symphysis pubis to the same distance above the umbilicus, as the contents of the cysts were too viscid to be taken away, and it was necessary to remove the tumour entire. The peduncle was little more than an inch in length, and of about three fingers' breath. I enclosed it in a clamp, and screwed this as tightly as possible, but, after cutting away the tumour, one end of the cut pe-

duncle slipped from the clamp, and I was obliged to transfix it, and tie in two portions to stop rather a free hemorrhage. Some delay was thus occasioned, and a few ounces of blood were lost. It was also necessary to tie a vessel in a small piece of omentum, which had adhered to the cyst. The peritoneal cavity was thoroughly cleaned from all blood, and the edges of the wound brought together by gilded hare-lip pins. One of these pins happened to transfix a small vessel, and it was also necessary to tie this on both sides of the wound. The peduncle was fixed outside the wound, although not without some tension, and the clamp was then used to prevent any danger from its slipping within the abdomen. The patient had been kept under the influence of chloroform. Her pulse was a very good one at 100 when the operation was concluded. About an hour afterwards, when the influence of the chloroform had subsided, she began to complain of some pain in the abdomen, and a suppository containing one-third of a grain of acetate of morphia was passed into the rectum. The pain continued about an hour, two other suppositories being given at intervals of half an hour. The pain was then relieved, but not entirely so, and a fourth suppository was given after another hour; she then seemed inclined to sleep. The tongue was clean and moist; pulse 104, and soft. Half an ounce of brandy was then given in water. She was refreshed by some sleep, but as she was not quite easy, and the pulse was up to 112, a fifth suppository was given at half-past 9 o'clock; at 11 o'clock the pulse was 130; skin and tongue moist; six ounces of urine removed by the catheter. There had been no sickness since the operation, and I left general directions to repeat the suppository when pain or restlessness rendered it necessary.

I saw her at 9 o'clock A. M. on the next morning, when the report was that she had had no pain, but did not sleep, and a sixth suppository was given at midnight. After this she had passed a very comfortable night, sleeping soundly from 2 in the morning. She complained neither of pain nor sickness, though there was considerable distention of the intestines by flatus. The countenance was very cheerful; but only four ounces of urine were removed from the bladder on using the catheter. Pulse 124, soft. She took her breakfast with appetite, and then a seventh suppository was given. She was remarkably well all the forenoon; took some beef-tea with good appetite; said she felt very comfortable, flatulence being the only source of discomfort. With a view of keeping her comfortable, and preventing any return of pain, another suppository, the eighth, was given at noon, but it afterwards ap-

peared that only about half of this had passed from the tube by which it was administered. I saw her at 4 o'clock P. M.; she was then apparently doing well, but I thought the pulse was rather feeble, and there was a slight appearance of anxiety about the eye-brows, and the flatulence was still troublesome. An aromatic draught, with twenty minims of chloric ether, was given, and she asked for some tea and drank it, and then, in about half an hour, suddenly went off into collapse, the pulse becoming almost imperceptible, the skin bathed in profuse perspiration, the breathing stertorous, pupils contracted, and on passing the catheter it was found that no urine had been secreted since the morning. Brandy and ether were thrown into the rectum, as she was incapable of swallowing; but she never rallied, and died thirty-two hours after the operation.

Dr. Aitken kindly made an examination of the body for me, twelve hours after death. He reflected the anterior abdominal wall over the thighs, thus exposing to view the peritoneal aspect of the wound, the intestines, and the omentum. About the middle of the wound the metallic surfaces of three of the sutures were visible, crossing the incision, so that during life they must have been in contact with the peritoneal surface of the intestine. The bowels were greatly distended with gas, and this distention, doubtless, had the effect of separating still more the peritoneal edges of the wound. Dr. Aitken adds: "The parietal peritoneum in the immediate vicinity of the wound was dotted over with spots of hemorrhagic congestion; and recent lymph was abundantly effused on the surface of the peritoneum. The lymph appeared to spread from the wound as a centre, and gradually disappeared on the peritoneum covering the lateral regions of the abdominal wall. The impress of the wound was obvious on the surface of the gut, in contact with it. Some coagula of blood, and an abundant, consistent, lymphy exudation upon the peritoneal surface of the intestine corresponded to the edges of the incision and surface of the wound. An abundant exudation of recent lymph glued the opposed surfaces of the intestines to each other. This exudation was most abundant, and the process seemed to have been most intense in the immediate vicinity of the wound. It became less obvious, and was entirely absent as the attachment of the mesentery to the back part of the abdomen was approached. The lateral and posterior parts of the abdominal cavity were free from lymphy exudations, and the peritoneum appeared natural. A considerable amount of free liquid was present in the cavity generally; and in some places (as over the anterior

margin of the liver, and surface of the stomach and transverse colon) it was pent up within cavities formed by recent exudation. The fluid exudation was of an acrimonious nature, if one may judge from its effects upon the hands after frequent immersion in it, the body being yet warm. The fluid had a pungent, irritant effect upon the thin skin beneath the edges of the nails and surrounding their matrices. The peduncle of the tumour was secured by a clamp outside the wound, and also by ligatures. They embraced the Fallopian tube, a reduplication of the round ligament, the broad ligament of the uterus, and accompanying blood-vessels. The peritoneal surfaces of the pelvis and pelvic viscera were free from lymphy exudations, and appeared healthy; the kidneys were normal. No further examination was made."

I appended the following remarks on this case in a paper read before the Royal Medical and Chirurgical Society, February 8, 1859:—

"Seeing that this patient had completely recovered from the shock of the operation, and from the effects of the chloroform, the question arises, what was the cause of her death? It may be said that after so severe an operation we need not be too curious on this point,—that death was what might be expected with far greater probability than recovery. But in the cases previously related the peritoneum had been quite as much exposed; the adhesions had been more extensive; in one it had been necessary to leave the ligature on the peduncle within the abdomen; in the second it had been necessary to separate adhesions to the liver and gall-bladder; in the third there had been enormous ascites, considerable hemorrhage, and a very large vein had been tied. Yet in all these cases, apparently so much more unfavourable, recovery had been complete. Why, then, did this patient die?

"In the first place, did she get too much opium? She had two grains of morphia, in divided doses, within ten hours after the operation, and one grain in the succeeding twelve hours. Yet it was not until four hours after the last dose, that any bad symptoms appeared which could be attributed to opium. Possibly the ill effect might have been indirect, causing suppression of urine; and it is possible that the suppositories were not equally mixed by the druggist; that some of them given early produced little effect, containing little morphia, while those given later were too strong, and told with too great effect. Still, the reply remains—she was well for four hours after the last dose.

"Secondly, did she die from peritonitis? Some who con-

sider the amount of lymph effused, and the quantity of serum found in the peritoneal cavity, would answer this question unhesitatingly in the affirmative. But I doubt if simple peritonitis was sufficient to cause such sudden collapse. It was partial, confined to the visceral layer opposed to the wounded surface only, not dipping down among the coils of intestine. My impression is, that if peritonitis killed her, it was indirectly, by the formation of a morbid poison. The serum was very acrid: it made Dr. Aitken's hands smart for some time; had he wounded himself, in all probability he would have suffered from morbid poisoning. Had he attended a woman in labour, in all probability that woman would have had puerperal peritonitis. If, then, my patient could generate a poison capable of killing other people, may it not have killed her? It was, probably, formed only from the inflamed portion of the peritoneum, the other portion being quite capable of absorbing rapidly. It will be seen that this inquiry is not without its practical importance, suggesting, as it does, the inference that it may possibly be advisable, in some cases, to provide for a free outlet of the effused serum. I should say, that by the use of new sponges only, new flannel, clean bedding, and newly ground or gilded instruments, I had carefully guarded against any putrid infection.

" Thirdly, had the bleeding from the peduncle or omentum any injurious influence? I should say, if any, it was only indirect, by leading to delay, longer exposure of intestine, and more necessity for cleansing the peritoneal cavity.

" Lastly, was the sudden collapse an example of that condition so well described by Dr. Simpson, as an occasional occurrence after any operation implicating the uterus and its appendages? He relates cases which had been observed by Lisfranc and himself, when a sudden faint or collapse, without premonitory symptoms, came on after excision of portions of the uterus. He saw it also in a patient upon whom Mr. Syme had performed the perineal section; in two or three cases after the emptying of an ovarian cyst; and once or twice after the termination of natural labour. He adds:—' It is an accident which seems peculiarly liable to occur after operations or injuries about the pelvic organs; and no sufficient explanation of it has yet been offered, nor does it even appear that sufficient attention has yet been given to it. I am not sure but that in amputating the cervix uteri, by obviating the necessity of forcibly dragging down the uterus from its position in the pelvis, we do something towards the prevention of this alarming and dangerous complication.' These observations of Dr. Simpson

are of great value, for if it were proved that traction upon the uterus was sometimes a cause of fatal collapse, it would lead us, in cases of short peduncle, rather to leave the stump within the abdominal cavity, than to draw the uterus far from its natural position in order to keep the stump of the peduncle outside the wound.

"Without pretending to any very accurate estimate of the share each of these agencies may have had in causing death, I will briefly state, that the lessons impressed upon my own mind by the case are,—first, that while my confidence in opium, as a preventive of peritonitis and as a remedial agent of great value in its treatment, is unshaken, I shall give it for the future in solution, not in the solid form. In the latter case, one is dependent upon the accuracy of the druggist, and it is possible that solution in the intestine may go on slowly for a time, and that a second or third suppository may be given before the first is dissolved. I shall adhere to the plan of giving it by the rectum, as less likely to induce vomiting, and to interfere with the digestion of food, and I shall administer it in solution by a graduated syringe formed to inject one, two, three, or four drachms of fluid with perfect accuracy.

"Secondly, if with pain in the abdomen there were the physical signs of serous effusion, I would provide for the escape of this serum through some portion of the wound.

"Thirdly, in a case of very short peduncle, I would either cut away a portion of the cyst, so as to add to the length of the peduncle, or I would rather leave the stump in the abdominal cavity, including it in an India-rubber tube, than exert much traction upon the uterus.

"Lastly, in bringing the edges of the wound together, I would take care to pass the pins not only through the abdominal wall, but they should pass through the peritoneum some little distance from the wound on either side, so that the divided edges of the peritoneum might be fairly brought into apposition, and no purulent secretion from the wound in the skin, fascia, or muscle could enter the peritoneal cavity."

Case V.—*Compound Ovarian Tumour; Ascites; Ovariotomy; successful result.*

R. W., aged 43, came from Dorking to consult me, and was admitted into the Samaritan Hospital, March 28, 1859.

History.—She had been married twenty years; has had eight children, seven of whom are living. Her mother is said to have died of ascites, but it might have been ovarian dropsy.

Four years ago she was confined with her last child. During her pregnancy she had a great deal of pain in the left side. This disappeared after the labour, but her abdomen did not diminish in size as usual. On the contrary, it continued to increase gradually, but very slowly, until September, 1858, when the increase became more rapid. It was not noticed to increase more on one side than the other, but extended centrally from below upwards. Since the more rapid increase she has lost health, strength, appetite, and flesh. The catamenia have been quite regular, but there was a greater quantity than usual last time.

Present State.—She is a large, spare woman, of very sallow complexion, and the skin is blotched in brown patches, very much like "bronzed skin." Bowels regular; rapid, very feeble pulse. The appearance of the abdomen is well represented by the appended wood-cut, copied from a photograph taken by Dr. Wright, but some months later, just before the operation.

Fig. 1.

The girth of the umbilicus was fifty-three inches, while the vertical measurement from the ensiform cartilage to the symphysis pubis was twenty-eight inches. She had an umbilical hernia long before the commencement of her present disease, and the skin at this spot was thin and transparent, being distended almost to bursting. Between the umbilicus and the symphysis pubis the skin was raised by dilated and varicose lymphatics,

presenting a very peculiar appearance. No solid tumour could be felt, but a fluctuation was very distinct all over the abdomen, though more distinct above, and less below; and, as percussion showed that the intestines were in the lumbar and hypochondriac regions, it was thought probable that an ovarian tumour was surrounded by ascitic fluid. Vaginal examination did not settle the question. The anterior wall of the vagina was somewhat depressed, but the uterus was movable, and no solid tumour could be felt.

Progress of the Case.—Partly because the skin at the umbilicus threatened to give way, and the patient was suffering greatly from distention, and partly to settle the diagnosis, I tapped the abdomen and removed six gallons of pale, amber-coloured, highly albuminous serum. A movable, unattached ovarian tumour was then discovered, apparently about the size of a man's head.

She suffered a good deal from sickness and depression for some days after the tapping, but left the hospital on the 4th of April, provided with an elastic belt and umbilical pad, with directions to return before the abdomen became as much distended as it had been.

She remained in the country until May 7th, when she was readmitted. The girth of the umbilicus was then fifty-one inches, and the distance betwen the ensiform cartilage and symphysis pubis twenty-eight inches. The catamenia had not appeared since she left the hospital, but they came on the day after she returned.

It now became a question whether ovariotomy should be performed at once, or whether an attempt should be made to lessen the shock of the operation by removing the ascitic fluid first, and the tumour in a few days afterwards. After consultation, I decided on the latter course, and removed forty-nine pounds ten ounces of ascitic fluid on the 9th of May. Sickness, tympanitis, some pain, and rapid, feeble pulse continued for ten days after the tapping; and it was not until the 24th of May that she was in a state sufficiently favourable for operation.

Operation, May 24th, at half-past 4, P. M.—I was anxious, if possible, to remove the tumour before much ascitic fluid escaped, in order that this fluid might serve as a protection to the intestines from the air. Accordingly, as soon as the integuments were divided over the linea alba from two inches above the umbilicus to about the same distance above the symphysis pubis, and some bleeding from superficial vessels had ceased, Dr. Routh pressed the tumour well forwards, as I rapidly laid

the peritoneal cavity open throughout the whole extent of the incision. There were only one or two slight omental adhesions, and as soon as these were separated by the hand the tumour was easily removed. The pedicle was formed of the right Fallopian tube, and broad and round ligaments, and was so very short that the clamp used to secure it was placed close to the uterus. The tumour was removed by cutting away, leaving a portion of it projecting as a mushroom outside the clamp. Scarcely an ounce of blood was lost. The wound was united by five harelip pins passed through the whole thickness of the abdominal parietes, including the peritoneum, which was perforated on each side, at about a third of an inch from the divided edge; the needles perforating the skin on each side at about an inch from the divided edge. Superficial sutures of silver wire were introduced between each pin. The clamp and stump of the pedicle were both outside on the abdomen, and the wound closed around. Not until the wound was nearly united was the ascitic fluid pressed out. The operation only occupied ten minutes. Lint was placed over the wound, and the abdomen supported by a flannel bandage. The tumour was a good specimen of the pseudo-colloid ovarian tumour, or compound ovarian cyst, and weighed ten pounds. The patient remained rather faint, and very sick for about an hour, when she began to recover. A morphia suppository (one-third of a grain), was introduced at 6 o'clock, P. M. A little brandy and water was given, and she began to feel better. At 10 o'clock, P. M., as there was some pain, a second suppository was given.

First day after operation. Vomiting continues troublesome, but she has had a fair night. Pulse 98; skin moist and warm; tongue clean; no pain; urine passed by catheter scanty and high coloured. Six minims of hydrocyanic acid were given in an ounce of water, but it was soon thrown up. Effervescing draughts were given in the afternoon; but the sickness continued, and she kept nothing on the stomach all day; still at night she was cheerful and without pain, and the urine increased in quantity.

Second day. Pulse stronger than it was before the operation. Some inclination in the bowels to act. Going on well in all respects. There was some abdominal pain in the afternoon, and another suppository was given. Vomiting had continued, but she kept some tea and toast down this afternoon. At night there was sickness and faintness, with small, feeble pulse, and anxious countenance; and small quantities of brandy and iced water were given at intervals through the night.

Third day. Sickness continues; pulse 120, very feeble; she is very low and faint, and the skin covered with a cold clammy perspiration; breathing a good deal oppressed; urine scanty and high coloured. Finding the physical signs of a large accumulation of fluid in the peritoneal cavity, I removed the clamp; and, after fixing the pedicle by a ligature, introduced my finger beside it, and thus gave exit to several pints of very fetid serum. She felt very much relieved after this. The sickness ceased two or three hours afterwards, and she kept down some cider, to which she took a fancy, and some veal broth afterwards. The pulse ranged to-day between 140 and 130.

Fourth day. Better all the morning, but in the afternoon she attempted to get to the night-chair, of course against orders, and was very much exhausted afterwards. She was faint, bedewed with cold perspiration; the hands and feet very cold; and the pulse almost imperceptible. Brandy was given freely, and she rallied. Then retching became very distressing, and a turpentine enema was given. This came away with some fæces, and a large amount of flatus. Rum and milk were afterwards injected into the rectum, and brandy was given every hour with water.

Fifth day. She is rallying. Sickness ceased after some iced champagne which was given this morning. The harelip pins were removed, and the wound found well united deeply, though the edges of the skin had not united. There is still a considerable discharge of fetid serum from the lower portion of the wound, where the ligature on the remains of the pedicle passes. Six ounces of strong beef-tea, with half an ounce of brandy, were injected into the rectum three times to-day, and she drank a quart bottle of champagne. A large quantity of flatus passes *per ano*.

Sixth day. Rather better all day; but is much troubled by flatulent distention of the abdomen. An enema of two drachms of tincture of assafœtida, and half an ounce of turpentine in a pint of thin arrow-root, was given, which came away soon afterwards, followed by a great deal of flatus, and much relief. Pulse has ranged as yet from 120 to 130. The enemata of beef-tea and brandy were continued, and she took champagne freely.

Seventh day. Pulse down to 108; urine more copious; abdomen much diminished in size. Beef-tea enemata and champagne as yesterday.

Second week. During this week there was a gradual amendment, though sickness and flatulence were troublesome

at times. The ligature came away with the sloughing stump of the pedicle on the eighth day, when the superficial sutures were removed, with the exception of one. Pulse ranging from 108 to 96, until the thirteenth day, when it ran up to 130 after a restless night. In the afternoon of this day there was a very large discharge of fetid pus from the opening left by the passage of the pedicle. She was low and heavy after this for some hours, and complained of cold feet; but some abdominal pain which had troubled her disappeared.

Third week. This was a week of slow, but steady improvement. She began to take food with appetite; the bowels acted regularly; the pulse ranged from 120 to 100. The urine was passed in natural quantity; the discharge from the wound gradually ceased: she began to sit up; the opening where the pedicle passed very rapidly filled by granulation; she passed good nights, rapidly gained strength, and left the hospital to return to Dorking by railway, on the 20th of June, twenty-seven days after the operation, and she was in robust health when seen there on the 30th of August.

Remarks.—One point of great practical interest in this case, namely, the propriety of removing ascitic fluid surrounding ovarian tumours as a preliminary step some days before ovariotomy, will be further illustrated by the history of the next case. The plan of uniting the wound by including the peritoneum in the sutures is one also worthy of remark. A third point of importance is the removal of the tumour while the peritoneal cavity is protected by the presence of the ascitic fluid. A fourth is the evacuation of the serum collecting in this cavity after the operation by opening the wound, as suggested in the remarks on the last case. Whatever may be thought of the hypothesis there advanced, it is very clear that, in the case above narrated, the practice so recommended was attended with the most marked success. The first evacuation of the serum was followed by immediate amendment, and some days afterwards the alarming symptoms disappeared soon after the escape of some fetid pus. This was precisely what was observed in Case I., where there was a very copious fetid sero-purulent discharge from the abdomen through the portion of the wound kept open by the ligature on the peduncle. It may be remembered that on two or three occasions when this opening became plugged accidentally, the patient complained of a good deal of pain, and became feverish, but immediate relief was afforded by a free discharge of fluid after clearing the ligature.

Case VI.—*Fibrous and cystic Ovarian Tumour; Ascites; Pleural Effusion; Ovariotomy; Death forty hours after Operation.*

E. Q., aged 29, was first admitted to the Samaritan Hospital, March 20, 1858.

History.—She was married seven years ago; her husband is alive, but she has had no children. First observed a tumour accidentally, low down in the right side, in May, 1857. She was attended by Mr. Roper, of Shoreditch, and Dr. Oldham saw her in November. The *ballottement* of the tumour was then so distinct that the possibility of pregnancy was suggested. After this the tumour increased, and the abdomen enlarged rapidly from the collection of ascitic fluid.

State on Admission.—A small, spare, delicate woman, with abdomen larger than a woman at the full period of pregnancy. At the lower part of the abdomen there is a solid tumour freely movable, not fluctuating. The os uteri does not admit the uterine sound; motion of the tumour is communicated instantly to the uterus. The catamenia have been regular, but rather excessive.

Progress of the Case.—As she was suffering greatly from abdominal distention, I tapped her on March 22nd, and removed thirty pints of turbid serum. The tumour was then found to be rather more to the right than left side, freely movable, smooth and hard, and measuring about seven inches by six. A certain amount of feverishness and pain followed the tapping, and some pain in the chest, and cough. A sinapism was applied to the chest on the right side. Bitartrate of potash was given three times a day in drachm doses, and small doses of morphia occasionally. She was afterwards put upon cod-liver oil, and a blister was applied. She left the hospital on May 11th, a note being taken at the time that the respiratory murmur was puerile on the left side, and defective below on the right side, where there were dulness on percussion, and absence of vocal fremitus.

She remained at home until November, 1858, when she was readmitted. At this time there was, as before, considerable doubt as to the nature of the tumour, and it was felt almost impossible to decide if it were a solid ovarian tumour, or a pedunculated fibrous outgrowth from the fundus of the uterus. In order to assist in determining this question, as the uterine sound would not pass the canal of the cervix uteri, I divided the cervix with Dr. Simpson's hysterotome, and the sound then passed to the extent of six inches. This was thought to be conclusive evidence that the tumour was uterine, especially

as the catamenia were abundant, and the tumour and uterus moved together in all directions. Then arose the question whether, as the tumour was evidently killing the woman by keeping up the collection of ascitic fluid, it would be justifiable to remove it. This was settled in the negative, on account of the state of the chest; for, after removing the ascitic fluid a second time, there still remained a troublesome cough and dyspnœa. There were the physical signs of effusion in the right pleural cavity, but a good deal of doubt was expressed by different physicians who examined her as to the amount of this effusion, and how far dulness depended on the fluid, on consolidated lung covered by a thin layer of fluid, or on displaced liver. Under these circumstances it was decided not to interfere surgically. The patient went home again and took a course of bichloride of mercury and bark, under which, with an occasional return to cod-liver oil, the breathing improved considerably, and she recovered some strength; but the abdominal enlargement considerably increased.

She was admitted, for the third time, on June 8, 1859. The tumour had undergone a remarkable change. It was, at least, double its former size, and, though still hard below, was distinctly fluctuating above. It extended from the pelvis to half-way between the umbilicus and ensiform cartilage. The uterus only admitted the uterine sound two and a half inches, and the tumour could be moved freely upwards without affecting the position of the uterus; though on pressing it backwards the uterus moved in the same direction. The tumour was surrounded by a large quantity of ascitic fluid. The largest circumference of the abdomen was at about an inch above the umbilicus, where the measurement was forty-four inches. The distance from the ensiform cartilage to the symphysis pubis was twenty-one inches, the umbilicus being mid-way. The general health is far better than before; she is able to walk about, has a good appetite, and sleeps well, but can only sleep when lying on the right side. There is slight cough, but much less than before. The catamenia appeared once last December, but since then she saw nothing till a week ago, when the flow came on, lasted three days, and was in about the usual quantity. She was placed on a liberal diet, with wine and beer, and ten minims of the muriated tincture of iron were given three times a day. The urine is natural in quantity and appearance, contains no albumen, but some phosphates.

A consultation was held, when the state of the chest became the subject of anxious consideration. The presence of some fluid in the right pleural cavity was undeniable, but the

lung played with tolerable freedom, and it was decided that there was nothing in the state of the chest to forbid operation. On the contrary, it was hoped that by removing the tumour, the cause of the pleural effusion would also be removed. It was clear that there would never be a more favourable time for operation, as the tumour was increasing rapidly. Still the operation was decided on, rather in compliance with her earnest wish to obtain relief than by the advice of the medical staff.

June 17th. Chloroform was administered by Dr. Priestley, and I commenced by making an incision through the integuments over the linea alba from two inches above the umbilicus curving round it down to two inches above the symphysis pubis. When the bleeding had ceased, the peritoneal cavity was opened to the same extent, the tumour being pressed forwards by Dr. Routh, as some twenty or thirty pints of the ascitic fluid were escaping. It became necessary to extend the incision upwards towards the ensiform cartilage on account of the large size of the tumour. Some rather extensive adhesions of the omentum, and of three portions of intestine were broken down, and then the tumour was pressed out through the wound. A large cyst at the upper and back part of the tumour gave way at this time, and it is probable that some of the fluid contents passed into the abdominal cavity. The pedicle was very short; or it might almost be said that there was no pedicle, the tumour being closely applied to the right side of the fundus of the uterus, the Fallopian tube much thickened and elongated, being closely attached to the walls of the tumour. A clamp was passed, however, between the uterus and the tumour, and the tumour separated by cutting it off, leaving a mushroom-shaped piece of it embraced by the clamp. A vessel in the substance of this piece of the tumour bled a little, but it was stopped by putting on a second clamp, and a strong twine ligature, the first clamp not including the whole of the part connecting the tumour with the uterus. The edges of the wound were then brought together by harelip pins, including the whole thickness of the abdominal parietes, and by intermediate superficial sutures of silver wire. Before the wound was finally closed, the ascitic fluid still remaining in the cavity was allowed to run out, and the patient was then lifted to bed.

The tumour consisted of a large lower solid portion, simply fibrous in structure, and of a large upper cyst with fibrinous clots adhering to the cyst wall. When the contents were removed the tumour weighed seven pounds and a half.

The patient remained very low for about an hour after the

operation, but recovered after taking some brandy and water, and vomiting. At 7 o'clock, P. M., she began to complain of pain in the back and abdomen, which was relieved for a time by an injection of fifteen minims of laudanum and two ounces of water into the rectum. She could only lie on her right side. The injection was repeated at half-past 8, and at half-past 10 o'clock the report is:—"Much improved; skin moist and warm; pulse 120; she slept for the last two hours without waking; and has not been sick again; no pain." Some clear urine was removed by the catheter.

Day after the operation. Slight sickness continued early in the morning, but she feels much better; pulse 108; tongue moist. The bed being saturated with ascitic fluid, which had continued to dribble beside the clamp, she was put on a dry bed, and the portion of the tumour projecting beyond the clamp was removed, as it was becoming offensive. She complained again at noon of slight abdominal pain, which was again relieved by the opium enema; she slept a good deal during the afternoon; skin warm and moist; pulse 100; breathing rather rapid, and a wish to cough, which was suppressed as it caused pain. She took some champagne and brandy and water, in small quantities, at intervals, during the day, but could not keep anything else on the stomach. The sickness increased towards night, and the pulse became more rapid and feeble.

Second day. During the night she complained of occasional pain, which she said was relieved by vomiting. Towards the morning the vomiting increased in frequency, and the pulse became more rapid and smaller. Enemata of brandy and water were administered; but she gradually sank, and died forty hours after the operation.

Examination three hours after Death.—There were from two to three pints of clear serum in the peritoneal cavity, no blood nor clots. The peritoneal aspect of the wound was perfectly united, the pins being quite hidden from view by the fold of membrane on either side. There was evidence of peritonitis to a considerable extent in the parietal portion of the membrane, especially on either side of the wound, and over the folds of intestine in apposition; the portion of omentum which had been adherent was also thick, injected, and hard. The peritonitis did not appear to have extended to the more deeply-situated folds of the intestine. About a pint of serous fluid had gravitated into the pelvic cavity. The peduncle was completely circumscribed by the ligature; it consisted of the Fallopian tube, and broad and round ligaments. The ligature

was tied within half an inch of the fundus of the uterus. The opposite ovary was of natural size; but both it and the Fallopian tube appeared to be congested. The uterus appeared to have been the seat of old peritonitis, as there were patches of organized lymph on its posterior surface. In the right pleural cavity there were upwards of six pints of clear serum; the lung was compressed and lying close to the spine, but it was still crepitant, and floated in water; the substance of the left lung was healthy, but there were extensive adhesions of both parietal and inter-lobular pleuræ. Nothing unusual in heart or pericardium, except a greater deposit of fat than ordinary near the apex of the heart.

Remarks.—This case, like the third and fifth, is an instance of a class of cases in which ovariotomy is resorted to as a last resource,—as the only thing to be done for a patient otherwise doomed to a speedy death. Large solid tumours, surrounded by ascitic effusion, in women broken down by long suffering, are among the most unfavourable cases the surgeon can meet with. Yet in the third and fifth cases such tumours were removed with the happiest results; and it appears probable that the pleural effusion in the present case had an important influence in preventing the recovery of the patient.

Case VII.—*Multilocular Ovarian Cyst; Ovariotomy; Recovery.*

J. F., aged 29, a lady's maid, single; admitted to the Samaritan Hospital, May 17, 1859.

History.—Has been in good health until eighteen months ago, when she first noticed a hard swelling on the right side. This increased, and Mr. Burton, of Blackheath, diagnosed ovarian disease. Increase continued, and she was admitted into St. George's Hospital, under Dr. Lee, in August, 1858. She remained there ten weeks, and left with directions to return when tapping became necessary. The catamenia continued regular up to November, since then they have appeared every fortnight. She was readmitted to St. George's Hospital on the 1st of March, 1859. She was tapped, and thirty-one pounds of thick amber-coloured fluid removed. After three weeks she went to the country, where she remained for six weeks previous to her admission to the Samaritan Hospital.

State on admission.—A well-formed, middle-sized, rather delicate-looking person. The abdomen is greatly distended, measuring forty-one inches in circumference at the umbilicus, and nineteen and a half inches from the ensiform cartilage to the symphysis pubis. She suffers great pain from the disten-

tion, and from indigestion; the respiration is much impeded; fluctuation very distinct all over the abdomen; dulness on percussion anteriorly and laterally, but clearness in right lateral lumbar region; both lumbar regions, and left lateral lumbar dull; anterior wall of vagina depressed; uterus normal and movable, but pressed backwards; pulse rapid and feeble; thoracic organs healthy.

Progress of the Case.—May 18th. Has passed a very bad night, suffering from distention, but some relief was obtained by opiates and a purgative.

20th. It was decided in consultation that I should tap, and, if the cyst proved to be unilocular, inject iodine; while, if it were multilocular, I should perform ovariotomy if her general health improved, and before the cyst became so much distended again. Accordingly, I removed twenty-three pounds of viscid fluid, sp. gr. 1012, and, by the use of Dr. Hewitt's ovarian sound, satisfied myself that there was a cluster of smaller cysts within the principal one. Iodine, therefore, was not used. Some temporary relief was obtained by the tapping, and she left the hospital on May 27th, with directions to return when the girth reached thirty-six inches.

She was readmitted June 22, 1859, in much better health than before, and it was decided, after consultation, that I should remove the cyst.

24th. Chloroform was administered by Dr. Graham Weir, of Edinburgh. I made an incision four inches long, over the linea alba, midway between the umbilicus and symphysis pubis, dividing the tissues until the cyst was exposed. I then broke down some extensive, but very slight, adhesions to the parietes, first with the finger and then with the hand, and rapidly emptied the principal cyst by a large trocar; some traction was made on this cyst as it was being emptied, but it could not be withdrawn. A second interior cyst was then tapped and emptied, but the cyst still remained firm. I accordingly enlarged the incision until it extended from the umbilicus to about an inch from the symphysis pubis, and, after separating a large portion of the omentum (which adhered to the upper portion of the cyst) and a coil of intestines, the cyst was withdrawn, and the edges of the wound carefully pressed together to prevent protrusion of the intestines. The peduncle was short and very broad, but after separating some portions of it, which did not contain vessels, by the hand, it was secured by a clamp fastened close to the uterus, and the cyst cut away, leaving a portion projecting beyond the clamp. Considerable traction was necessary to keep the clamp outside the wound, but this

was effected, and the divided edges of the abdominal parietes, including the peritoneum, united by harelip pins and by intermediate superficial wire sutures. The opposite ovary had been examined and found healthy.

The tumour consisted of one large cyst, and a group of smaller ones, containing fluid of very different density: one contained almost pure blood.

She remained depressed for about two hours, when she became restless, and complained of intense pain all over the abdomen. A large linseed poultice, covered with linen so that it could be changed easily, was applied, very hot, over the whole abdomen, and an enema of thirty minims of laudanum given in two ounces of water. This gave great relief. Sickness continued troublesome, but she passed a tolerable night.

It is needless to give a daily report of the case further, as it was almost one of uninterrupted recovery. The opium enema was repeated occasionally when there was pain. The poultices were used constantly for several days. On the third day she suffered a good deal from flatus, which was relieved by an injection of turpentine and assafœtida in thin arrow-root, a copious motion following it. I removed the pins on the fourth day; on the fifth the catamenia appeared unexpectedly; on the sixth day she appeared rather low and feverish, and the pulse became feeble and rose to 110. I carefully examined the wound, and pressed out from one to two drachms of very fetid pus from the track of one of the pins. This gave almost immediate relief. Sickness continued troublesome at times during the first week. The clamp was removed on July 2nd, and the last of the superficial sutures on the following day. A fortnight after the operation she was sitting up in bed, eating and sleeping well, almost free from pain, pulse 80, and the wound quite healed, except at the spot where the peduncle had passed; here there was still a little fetid purulent discharge.

July 14th. Wound healed; convalescent. She left the hospital four weeks after the operation; and I saw her on the 11th of August, strong and well, feeling, she said, "better than she ever was in her life before."

Remarks.—The chief differences in the treatment of this case to those previously reported, were the use of very hot linseed poultices to the abdomen, frequently removed; the smaller use of opium; and the earlier clearing of the bowels by enemata. The relief afforded by the poultices was very great and unmistakeable. The clearing of the bowels on the third or fourth day, by enema, may appear bad practice to those accustomed to keep the bowels confined by opium for a week or

ten days; but after trying this plan I have become convinced that it is carried too far, leading to flatulent distention, keeping up sickness, and, probably, doing as much harm as the opposite extreme of those operators who give calomel and black draught if the bowels are not open on the second or third day. In this, as in all other cases, the surgeon will do well to cast aside routine treatment, and, following the dictates of common sense, adapt his measures to the varying circumstances of the case before him.

Case VIII.—*Compound Ovarian Cyst; Ovariotomy; Convalescence.*

J. A., aged 47; married; admitted to the Samaritan Hospital, June 22, 1859.

History.—Married two years and a half ago, having been employed as a house-maid thirty-three years previous to marriage. Generally had good health; catamenia regular up to the age of forty-three, when they ceased, and only appeared once since, two years ago. Nine months after marriage she noticed some enlargement low down in the abdomen, and to the right side. She thought herself pregnant, and did not go under treatment for nine months longer; at that time she was treated for constipation, but the swelling and pain increased until January last, when she applied to Mr. H. Smith at the Westminster Dispensary, who detected ovarian disease, and tapped her; she filled again, and was tapped nine weeks after the first tapping; the third and fourth time the cyst filled at intervals of only three weeks: the fluid in each case being dark coffee coloured.

State on Admission.—A middle-sized, hectic looking woman, suffering from great pain both in the abdomen and back, dyspepsia and impeded respiration. A large ovarian cyst occupies the whole abdomen, and hard globular masses can be felt in the walls of the cyst on both sides.

Progress of the Case.—As she was very weak and restless, suffering from great pain, and a tendency to vomit, I decided, after consultation, to give some present relief by tapping, and then to endeavour to bring the general health up to a point at which ovariotomy might be performed with a better prospect of success. Accordingly, on the 26th of June, I removed eleven pounds of very thick fluid, which contained a great deal of decomposed blood, and coagulated fibrin. (This was afterwards explained by the fact that there had been a good deal of bleeding after the previous tapping.) She suffered from flatulent distention of the intestines for some days, and there

was some bleeding from the uterus. This was found to depend on a small polypus growing from one side of the canal of the cervix. I removed the polypus by torsion. During the next month she was put upon a liberal diet, with wine and beer, and improved so much in general health that it was decided, after careful consultation, to accede to the patient's wish to have ovariotomy performed.

July 25th. Chloroform was administered by Mr. Armstrong Todd, who used his new inhaler. I made an incision from five inches above the umbilicus, carrying it downwards in the median line to two inches above the symphysis pubis. One small artery was tied near the umbilicus. The peritoneum was divided along the whole extent of this wound as soon as the bleeding had ceased; extensive adhesions to the parietes on both sides were then broken down by the hand, and the cyst emptied by a large trocar. Adhesions to the omentum and small intestine were then carefully separated, but, before the cyst could be withdrawn, it was necessary to separate adhesions on the left side, by which the broad ligament, sigmoid flexure of colon, and Fallopian tube, were united with the cyst walls. The right ovary was that diseased, and the peduncle was formed of the right broad and round ligaments and Fallopian tube; but the left Fallopian tube was much thickened and elongated, and firmly adherent to the back and lower parts of the cyst, where the colon was also firmly attached. All these adhesions were broken down, the pedicle secured by a clamp, and the cyst cut away. There was then very free bleeding from several points where the cyst had been attached, and ten vessels had to be tied. Three of them were on different parts of the left Fallopian tube, and as this appeared to be so large and thick, and the left ovary (probably atrophied) could not be found, the tube was tied to the clamp, and fixed outside the lower part of the wound beside the peduncle. The wound was then united by harelip pins and superficial sutures, as in the cases previously reported. The ligatures were brought out about the centre of the wound.

The tumour was found to consist of one very large cyst, with a number of smaller cysts, and masses of semi-solid, pseudo-colloid substance in its walls.

It is unnecessary to follow the daily record of the case after operation, as it is merely one of almost uneventful recovery. Warm linseed poultices were kept on the abdomen; an occasional enema of twenty drops of laudanum in two ounces of

water was given when there was a little pain; the pulse varied from 90 to 112 during the first week; there was no vomiting till the third day; the harelip pins were removed on the third day, and the superficial sutures on the eighth; the wound united by first intention; the clamp was removed, and the bowels opened by warm-water enema on the fifth day. During the second week the only annoyance was from accumulation of flatus in the intestines, which was removed by the use of warm-water enemata. She had taken very little nourishment at first, but she soon began to take beef-tea, soda water and brandy, wine, and then the mistura vini gallici. On August 5th, two grains of quina were given three times a day, and on the 8th the dose was increased to three grains, as it seemed to have a good effect in diminishing the flatulent distention of the stomach and intestines. At the end of the month the wound had perfectly united, and the lower part had closed around the projecting end of the Fallopian tube, which was about the size of a strawberry. As she was anxious to leave the hospital, and was otherwise well, I removed the little projection on August 31st.

Remarks.—The chief peculiarity in the progress of this case, after operation, was the absence of vomiting. In my previous cases vomiting has been the most distressing symptom. The recommendation to give ice, or ice and opium, for some hours before the operation, was tried in the previous seven cases, but proved utterly useless. Ether was given instead of chloroform in the second case, also without any good effect. In my earlier cases I gave opium every four or six hours, or equivalent doses of morphia by suppository, keeping the bowels confined for eight or ten days after the operation; but thinking that this kept up sickness, and that the constipation led to flatulent distention, I discontinued this practice, only giving opium by enema, in small quantities, occasionally, when it was called for by pain, having the bowels opened about the fourth day by enema. The results of this treatment, combined with the constant use of hot poultices to the abdomen, have been most satisfactory. The patients have been in a far more natural state than before, suffering less from depression, nausea, pain, or flatulence, while the pulse has not been so rapid. Still the vomiting has been troublesome, and I determined to discontinue the use of ice before operation; it was not given in this case, but it would be unfair to attribute the absence of vomiting to this omission, as Mr. Todd finds that he is enabled, by the use of his inhaler, to keep patients narcotized by so

small a quantitity of chloroform that vomiting is rare. Further observation, however, is needed to settle this important practical question.

I have now very briefly to offer a few remarks on the means of diminishing the mortality after ovariotomy. And I propose to consider how our object of saving life may be obtained.

1. By the selection of proper cases only for operation.
2. By the determination of the stage of the disease in which the operation is most likely to prove successful.
3. By careful preparations to avoid all unnecessary sources of danger.
4. By the use of anæsthetics to lessen the risk of *shock*.
5. By certain precautions in the performance of the operation. And
6. By careful after-treatment.

1. As to the selection of cases. Without entering into the wide question of the diagnosis of ovarian tumours, it may not be quite unnecessary to say that the surgeon should be quite sure the tumour is ovarian before he determines to perform ovariotomy, when we remember that this operation has been attempted in cases of pregnancy, of hydatid tumours of the liver, of colloid disease of the peritoneum, of other malignant growths within the abdomen, of fibrous tumours of the uterus, of excessive fatty deposit in the integuments, of ascites, and in cases where there was no tumour whatever. The more glaring of these errors are not likely to be committed again; but with all our care there are cases in which doubts can only be entirely removed by an exploratory incision.

Then as to the characters of the tumour, I have no doubt that the surgeon who would only operate on cysts containing fluid which could be easily emptied, and if non-adherent, withdrawn through a very small incision, would be more succesful than another surgeon who removed solid tumours requiring the long incision. But the cases I have related, and very many others on record, show that the presence of extensive adhesions and large solid masses are quite consistent with a successful result.

The cases in which the operation certainly ought not to be performed are those in which there is coexisting disease of some important organ. If all the patients who had died after ovariotomy from old standing diseases of the lungs or kidneys were eliminated from the catalogue, the results of the operation would appear in a far more favourable light. The ope-

ration is descredited because it has been performed in ill-selected cases.

There are those who believe that the existence of adhesions, so far from contra-indicating the operation, are rather favourable than otherwise, inasmuch as the peritoneum, in its altered character, is not so likely to take an inflammatory action as when it is in a tolerably healthy condition. Many facts might be cited in favour of this view, and more against it; and it is one deserving of further inquiry.

2. As to the period for operation. There are surgeons who would only operate as a forlorn hope, when it is quite clear that the patient's days are numbered, and that if her life be shortened by the operation she cannot lose very much. Some, on the contrary, argue that this plan of operating *in extremis* has brought, and does bring, the operation into undeserved discredit; and that the less the general health of the patient has been shattered by the disease the more likely is she to survive a severe operation. To this it is replied that ovariotomy is an exception to the general rule, and that the most successful cases are those in which the patient has been most reduced by the disease, or the peritoneum most altered by extension. It is remarkable that in all the successful cases I have related, the disease was in a very advanced stage, while in the first fatal case it was in a much earlier period of development, and the general health comparatively little injured; but this point again requires more extended inquiry.

3. Patients have been exposed to unnecessary danger by being submitted to operation in a theatre, or in cold rooms, or in dry overheated rooms; or their limbs have been imperfectly covered and not protected from the fluid emptied from the cyst even after it has ceased. I have seen a patient's legs, thighs, and buttocks perfectly cold and wet from having been exposed for nearly an hour, uncovered, and lying on a sheet soaked with fluid. All this has been sufficiently insisted upon by Dr. Clay, Dr. F. Bird, and others, to render more than an allusion unnecessary.

4. *The use of Anæsthetics.*—The materials do not exist for a trustworthy comparison of the results of ovariotomy in cases where ether or chloroform were and were not administered. This is another question which can only be settled by future and more extended observation; but I firmly believe that the mortality *must be* diminished by the use of anæsthetics. The sickness which sometimes follows the use of chloroform is, of course, a great disadvantage, and the depressing effects might, in some cases, be too great; but, on the whole, I think, that by

greatly lessening the anxious apprehension of suffering which so often brings patients into an unfavourable condition for undergoing any operation, and by entirely preventing the shock at the time of the operation caused by the pain, by the knowledge that the abdomen was laid open, and by the manipulations of the operator and assistants, the good effects of anæsthetics must far outweigh any occasional ill-consequences.

5. Supposing that all the necessary preparatory measures have been taken,—a quiet, well-ventilated room secured, a good nurse provided, a couch and mattress placed in a good light, the room warmed to about 70°, and the air kept from being too dry by a kettle of water boiling on the fire; the patient dressed in a warm flannel gown, and the legs kept warm by woollen stockings and hot water cans, if needful; a good supply of soft, new, well-scalded sponge at hand; plenty of water at about 96°; soft flannel moistened in this water to protect any exposed intestines; all the necessary instruments for incision, tapping, securing vessels and the peduncle, and uniting the wound; an abdominal bandage; and a clean, warm bed ready to receive the patient; with chloroform, ether, wine and brandy; —there are still some points of practical importance which deserve notice.

First. As to the assistants or visitors. I think it unfair to a patient to expose her to any possible risk of putrid infection from students or surgeons engaged in the dissecting-room. On this ground I think the anatomical students at our large hospitals should not be admitted to the bed-side, and no visitor should be invited who has recently been engaged in a similar manner. Those present should only be enough to afford the necessary assistance to the operator, not crowding round him, nor impeding the supply of air to the patient.

Second. The *incision* should be exactly in the median line, so that integument and aponeurosis only need be divided before arriving at the peritoneum; it should not reach sufficiently near the pubes to endanger the gravitation of serum into the areolar tissue around the bladder and that of the pelvis generally, still less to endanger the bladder. Without running this risk, sufficient space can be often obtained below the umbilicus. If more be required, the incision can be carried upwards towards the ensiform cartilage, still in the median line, but with a curve round the umbilicus.

Third. In case of any doubt as to the exact boundary of the cyst, it is far better to open it than to run any risk of unnecessarily detaching the peritoneum from the abdominal walls.

Fourth. In cases where the cyst contains fluid it is well to use a large trocar, in order to save time; and to have an elastic tube attached to the canula, so that the fluid may be removed without wetting the patient, and while the abdomen is still covered.

This modification of the trocar is of some importance. Tapping the abdomen with an ordinary trocar is a very clumsy proceeding. It is necessary to have basins held up to the canula, and these, as they are filled, are emptied into pails, amid much splashing, and unnecessary exposure and wetting of the patient. In all cases of tapping the chest or abdomen, or opening large abscesses, I have, for several years past, been in the habit of using the canula of Schuh, of Vienna, and attaching an elastic tube to it, thus conveying the fluid away quietly and neatly without alarming the patient, or wetting her linen, while the entrance of air into the space occupied by the fluid evacuated is rendered impossible. More recently I have used a still simpler and equally convenient instrument, first described by Mr. Charles Thompson, of Westerham, in the Medical Times and Gazette of March 27, 1858. This instrument is represented in the annexed wood-cut.

Fig. 2.

The trocar is made to fit the canula closely, like the piston of a syringe; there is an opening from the lower part of the canula, on to which an elastic tube can be fastened; I have added a stop-cock to the elastic tube, a few inches from the canula, in order that the rate at which the fluid flows off may he regulated, should the patient suffer from its too rapid evacuation.

In the next wood-cut the instrument is shown with both the trocar withdrawn and the tube attached.

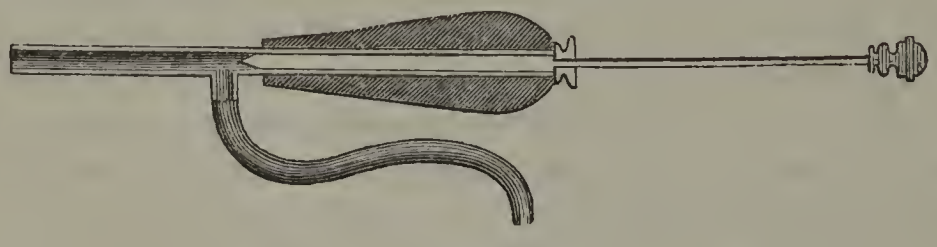


Fig. 3.

In ovariotomy the entrance of air into the sac is of no importance, and the mode of using this instrument is apparent;

but in simple tapping of ovarian cysts, as in evacuating fluid from the pleural or peritoneal cavities, or from the sac of large abscesses, it is of vital importance to prevent the entrance of air, and this may be done by drawing the piston back, as in fig. 3, placing the end of the elastic tube in a basin of water, and withdrawing the air from the tube and canula by suction, or by a syringe fitting the end of the canula. If the end of the tube be kept under water, and the piston be pushed forward, ready for use, the elastic tube is kept filled with water, which meets the fluid from the cyst when the operation has been commenced, and a syphon is formed. I think few surgeons who have once used this instrument, will ever use an ordinary trocar again for tapping either chest or abdomen.

Fifth. In breaking down adhesions it is far safer to use the hand than the knife. Should any portion of adherent omentum or mesentery contain large vessels, these should be tied or twisted at once, to prevent bleeding into the peritoneal cavity, and as it might be very difficult to find the bleeding point if once separated. In case of firm, tough adhesions the écraseur might prove very useful. Should there be adhesion to the intestines, or any viscus so firm that separation is very difficult, it might be better to cut away that portion of the cyst, leaving it adherent, than to run any risk of injuring an important organ; but in this case it would be desirable to remove the inner secreting coat of the cyst, if possible.

Sixth. In drawing out the cyst caution is required that the cyst only is drawn out; and, in removing a solid tumour, care is necessary that it does not fall suddenly and tear through any portion of the peduncle, thus giving rise to hemorrhage.

Seventh. In securing the peduncle ligatures were used in the first and second cases, clamps in all the others; but in the third and fourth these ligatures also became necessary, as in each case a portion of peduncle slipped from the grasp of the clamp. This danger, however, was avoided in the other cases, by taking care not to cut the cyst or tumour too close to the clamp, but leaving at least an inch projecting beyond the line of constriction. If ligatures be used, it should be remembered that a single one can very rarely be sufficient; and that cases are on record where patients have died on the table from a single ligature slipping, and it being afterwards impossible to find the bleeding vessels. The peduncle should be carefully transfixed, and tied in portions not broader than a finger. Perhaps it might be well to divide the round ligament with a knife, only tying the remainder of the peduncle; and I think it extremely probable that the écraseur may completely do

away both with the ligature and the clamp; as it might be used very slowly, and the peduncle not entirely separated for some hours after the wound was closed.

The annexed wood-cut shows the manner in which the

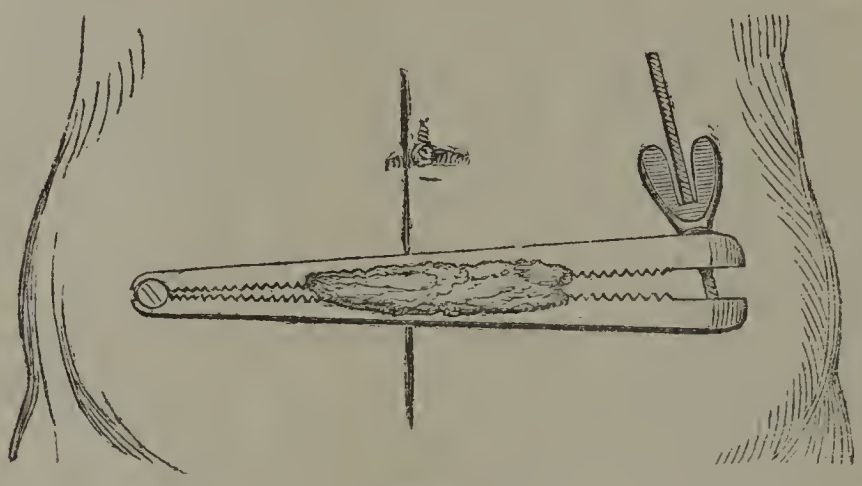


Fig. 4.

peduncle is embraced by the clamp, which lies across the wound, and prevents the sloughing stump from slipping into the abdominal cavity. In the drawing this instrument is half the real size, so that the body, to be in proportion, should be half the life size. I used this clamp in Case II., having it made like Ricord's fenestrated forceps for circumcision, with a screw for fixing. But it was not easy to apply, owing to the fixed stem; and as it was made of steel the rust which formed on it caused some irritation of the skin around the wound, although it was protected by lint. I therefore had an instrument made with a movable stem, and with two screws instead of one, in order to insure a more equable pressure on all parts of the peduncle;

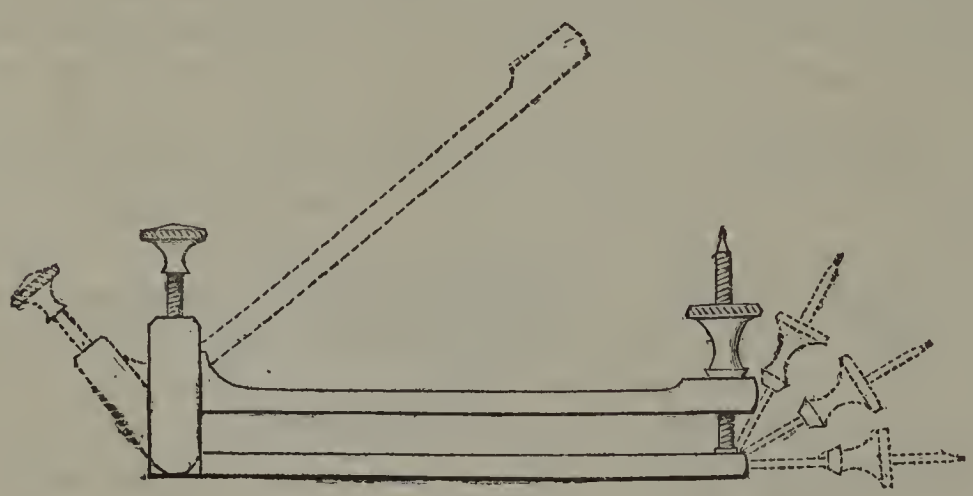


Fig. 5.

and it was strongly gilded to prevent rusting. This clamp is represented in the above wood-cut, the dotted lines showing

the manner in which the blade and stem are moved. I used this instrument in Case III., and I have since had the screws made flat instead of round, as, when the surgeon's hands are bloody, it is not easy to turn the round screw. In Cases VI. and VII. I used the calliper clamp, as originally devised by Mr. Hutchinson; but in Case VIII. I returned to my own, and believe it to be that which is most readily applied, which makes the most equable pressure on the peduncle, and lies the most easily, of any I have seen, upon the wound afterwards. The secret of safety from hemorrhage, in using any clamp, is to leave a sufficient amount of tissue projecting to give security against retraction of divided tissue, or slipping of the clamp,—in other words, not to cut away the tumour too close to the clamp.

Eighth. By carefully cleansing the peritoneum from all blood, clotted or otherwise, or any of the contents of the cysts which may have escaped. I think far more good is done by removing matter which would subsequently decompose, than harm by any irritation of the peritoneum with soft sponges. In this and previous stages of the operation the intestines should be kept as much as possible from protruding, by an assistant holding the edges of the wound together; and when intestine is exposed it should be protected by the warm moist flannel. Artificial serum has been used for this purpose instead of plain water, but I should certainly prefer the latter.

Ninth. In cases where it can be done without undue traction upon the uterus, the fixing the stump of the peduncle outside the peritoneal cavity appears to be a most important safeguard against peritonitis, and the low fever caused by absorption of the putrid matter flowing from the decomposing stump. Any one who sees the quantity of filthy sanies surrounding the stump as it lies on the abdomen of a patient day after day before it separates, must be struck with the danger attendant on such a process going on within the abdomen, even though this diffusion were checked by protecting effusion of lymph. It remains for a statistical inquiry to show how far mortality has been diminished in cases where the new plan (first recommended, I believe, by Mr. Duffin) was adopted.

Tenth. For bringing the edges of the wound together I think gilded harelip pins,—or pins of the *passive* iron-wire introduced by Dr. Simpson,—with the twisted suture, are the most trustworthy. The whole depth of the wound is brought together, and the pins act as splints, preventing any escape of intestine, an accident which has happened by the giving way of ordinary sutures. A few superficial sutures of silver, or iron-wire, may also be advisable to secure perfect apposition of the

divided edges of skin. I have found cotton-wool the most comfortable covering for the wound; and as an abdominal belt, nothing answers better than a double fold of flannel, kept from slipping upwards by a strip of linen passing round each thigh, and pinned to the lower edges of the flannel. Experiments on dogs, rabbits, and guinea-pigs, have convinced me that it is better to perforate the divided edges of the peritoneum by the harelip pins, so as to press two folds of the peritoneum against each other, than to run any risk of contact of the peritoneum with the divided tissues of the abdominal parietes. But as I intend to make these experiments the subject of a special communication to one of our learned societies, I merely state the result here for the information of other operators.

6. On careful nursing and judicious after-treatment a great share of success must depend. In many of the cases of ovariotomy reported, it seems perfectly wonderful that the patient has survived the after-treatment. Bleeding, leeches, blisters, calomel and purgatives, and starvation, have often been prescribed. Who can wonder at the death of the patient? The wonder is that so many have survived all this. The great objects appear to me to be to keep the patient perfectly quiet, free from pain, and thoroughly clean; the surgeon should not be led by the fact of the pulse being very rapid to fear peritonitis, and adopt active measures. It has seemed to me that the rapidity of the pulse is owing, in a great measure, to the return of the heart to its normal situation; but whether this be so or not it is certainly no ground for active measures. With the exception of opium, given with the precautions I have already indicated, I am disposed to attach far more importance to hygienic measures than to medicinal treatment. A well-ventilated room, warm, but not unpleasantly so to the patient, the air comfortably moist, and perfect quiet, seem to me to be the chief requisites. With the object of maintaining rest, the patient should not get up to pass water, but the catheter should be used every six hours. One good effect of the opium is to keep the bowels quiet, but if there be much flatulence I do not think it is well to keep up the state of constipation too long. I have never seen any good done by O'Beirne's tube in relieving flatulence. A little soda in peppermint water, or chloric ether with aromatic confection, seems to give as much comfort as anything; but this flatulence is always a troublesome symptom for some days. The intestines seem to miss their accustomed support or pressure. The application of warmth and moisture to the abdomen, by means of a warm linseed-meal poultice, is particularly grateful to the patient, and I feel disposed to regard

it as of considerable importance in the after-treatment. As to food, I have not been disposed to urge it until there was a decided appetite, but to leave beef-tea, arrow-root, with or without wine or brandy, rice-water, and barley-water, or a little tea and dry toast with the nurse, to be given very much as the patient wished for them, and, after a few days, some solid food. The fetid stump I have kept covered by a muslin bag of peat-charcoal, changed once or twice a day, in order that the patient might not be nauseated by the fetid odour which would otherwise proceed from it. I have not disturbed the wound until union was perfect; and if gilded pins or metallic sutures be used they may be left with safety for many days; though I believe the best plan is to remove the pins on the third or fourth day, leaving the superficial sutures three or four days longer. So soon as the patient is able to get about pretty well, country air is the best restorative.

I should be content with thus bringing before the profession a very imperfect sketch of what I have been taught by a study of the recorded cases of ovariotomy and by my own experience, submitting with very great diffidence the conclusions at which I have arrived, to the judgment of many whose observation of ovarian disease has been far greater than mine; but I feel that some reply is wanting to those who say that ovariotomy is an unjustifiable operation—one so dangerous to life that it ought never to be performed under any circumstances. I do not wonder that such a feeling should be entertained by many. I know well how painful it is to a surgeon to feel that he has shortened the life of a patient—that a woman who might have lived months, perhaps years, has died within a few hours of the attempt he has made to restore her to perfect health. But there is a reverse to the picture; for as surely as the end of some patients may be hastened, others are relieved from a life of suffering, and the surgeon's noblest end is attained—the complete cure of the diseased person without mutilation of any part of the body. In this and other respects the operations of ovariotomy and lithotomy in the adult are singularly analogous. In both, the sufferer is subject to a disease which causes great pain, or great discomfort; which may possibly go on for years without causing death, but which, if left alone, entails a miserable existence and a painful end. The stone in the one case, the tumour in the other, may be removed by the surgeon; but the attempt to save life may hasten death, and the proportionate mortality of the two operations is not very different. I am not about to append statistical tables to decide whether the mortality after ovariotomy has been 30, 40, 50, or

60 per cent. It may be made anything the compiler pleases by excluding, or not, cases in which errors of diagnosis, the obvious faults of inexperienced operators, mistakes in after-treatment, and coexistent diseases, have had a share in the fatal result. I might reply to Simon's tables of forty-six deaths out of sixty-four cases in Germany, that Dr. Clay, of Manchester, up to last year had had eighty-seven cases, and only twenty-seven deaths. I might even point to the encouraging results of my own limited experience; but I leave an extended statistical inquiry for future labour, with the simple remark that, taking the most unfavourable view the opponents of the operation have been able to substantiate, the mortality is not very much greater than that after lithotomy in the adult. It is not generally known, but it is true, that after the age of fourteen, more than one-half of those submitted to lithotomy in the hospitals of London die very soon after the operation; so soon, that the operation and the death must be looked upon as cause and effect. Yet nobody decries lithotomy as an unjustifiable operation.

But, it is said that by palliative treatment, by tapping, and by the injection of iodine, we have other means of relieving patients of ovarian disease, whereas the removal of the stone is the only means of relieving the calculous patient. I reply, that palliative treatment is of little avail—that tapping is in itself dangerous, even in the few cases to which it is applicable—and that, although injection of iodine is proved to be occasionally successful in those rare cases when the cyst is unilocular, yet its effects, even in these cases, are uncertain, and sometimes deadly.

An objection of far greater weight is the oft-repeated fact, that patients may live many years with ovarian disease, and die at last at a good old age. I answer, that it is no comfort to one woman dying of ovarian disease, to tell her that another woman has lived for fifty years with a disease somewhat similar. We do not purpose to perform ovariotomy in a case where a woman, if left alone, would probably live in tolerable comfort for several years. We let *her* alone, and do the little we can to increase her comfort. The cases in which we incur the heavy responsibility of performing a dangerous operation, are those in which the patient *must* take her choice on the one hand, between the risk attendant on such an operation, with a hope of perfect cure if all go well; and on the other, a life of suffering, to be terminated, at no distant date, by a miserable death. For in most cases it is a life of suffering, and great and constant suffering, mental and bodily; and death from the natural termination of the disease is one of the most trying we ever

witness. All must acknowledge the truthfulness of the following picture, drawn by one of the ablest and most logical of the general opponents of ovariotomy. In the last edition of his Lectures on the diseases of women, Dr. West, after describing a variety of painful symptoms under which women suffer in the earlier stages of ovarian disease, says (page 527) that as the end approaches we have " symptoms of the same kind as we see towards the close of every lingering disease, betokening the gradual failure, first of one power, then of another; the flickering of the taper, which as all can see, must soon go out. The appetite becomes more and more capricious, and at last no ingenuity of culinary skill can tempt it, while digestion fails even more rapidly, and the wasting body tells but too plainly how the little food nourishes still less and less. The pulse grows feebler, and the strength diminishes every day, and one by one each customary exertion is abandoned. At first the efforts made for the sake of the change which the sick so crave for are given up; then those for cleanliness; and lastly, those for comfort,—till at length one position is maintained all day long in spite of the cracking of the tender skin, it sufficing for the patient if in that respiration can go on quietly, and she can suffer undisturbed. Weariness drives away sleep, or sleep brings no refreshing. The mind alone, amid the general decay, remains undisturbed; but it is not cheered by those illusory hopes which gild, though with a false brightness, the decline of the consumptive; for step by step death is felt to be advancing; the patient watches his approach as keenly as we, often with acuter perception of his nearness. We come to the sick chamber day by day to be idle spectators of a sad ceremony, and leave it humbled by the consciousness of the narrow limits which circumscribe the resources of our art."

This picture drawn by Dr. West is true. We have all seen the poor creatures he so eloquently describes fading hopelessly away. But the resources of our art are not so limited as he would imply. We may be something more than idle spectators of a death-bed. We have a resource to offer,—hazardous it is true,—but one which has in many cases been crowned by a complete and brilliant success.

Some months ago I stood at one of these death-beds, in consultation with one of our highest authorities on ovarian disease. He was half convinced by my arguments in favour of an operation, but he felt his responsibility deeply, and said, " How dare I advise an operation we both know to be so dangerous?" I replied, " How dare you leave the poor woman to die without an effort to save her?"

These are the anxious doubts and grave responsibilities ever recurring in the life of practitioners of medicine and surgery. My earnest hope is, that by bringing this subject prominently forward for discussion, something may be done to solve the doubts and lighten the responsibility of those who seek for the "influence of authority in matters of opinion."

P. S.—While the foregoing pages were going through the press, the patient the subject of third case died. She had been quite well for several months, and had done farm-work in the field; but six weeks ago she began to complain of constipation, which increased, and she died on the 26th of August, with all the signs of intestinal obstruction. The peritoneum was studded with innumerable whitish, opaque, elevated deposits of fibrous cancer, from the size of a pin's head to that of a pea, and there were three very close strictures of the small intestine, caused, not by contracting lymph, but by the malignant deposit in the coats of the intestine. The peduncle of the removed ovary was fixed to the cicatrix, and disease had commenced in the other ovary, which was enlarged to the size of a small apple.

Art. XII.—*On Strangulated Femoral Hernia.* By Samuel G. Wilmot, M. D., Surgeon to and Lecturer on Surgery in Steevens' Hospital, &c., &c.

The uncertain result of the operation for strangulatd hernia demands a search after such evidence, direct and collateral, as can furnish a clue to the conditions upon which success or failure depend. That this operation often succeeds under circumstances apparently the most adverse, and sometimes fails where the conditions seem favourable, is a fact that cannot be denied; yet there is no operation in surgery more influenced than it by the circumstances as to the period at which it is performed, the duration of the disease, the urgency of the symptoms, as well as the health and age of the individual. Statistical investigation can alone yield solid practical instruction on these points. It may, I think, be laid down as an axiom, that the success of the operation for strangulated hernia is in the direct ratio of the early period at which it is performed. It is not so much the operative procedure which is to be feared as delay in resorting to it.

The following case is one of many that can be adduced in proof of the advantages of operating early.

A lady, aged forty-five years, a widow, having had one child, suffered from femoral hernia of the left side for eight years. The tumour was small; it disappeared when the patient lay on her back, and did not offer any annoyance unless after a long walk or fatigue of any kind, when it was apt to increase in size, and to become somewhat painful. On one occasion, while making a slight exertion, she suddenly experienced severe pain in the tumour, and this was almost immediately followed by a cramp-like pain across the lower part of the abdomen, which prevented her from standing erect. I saw the patient at the end of three hours from this occurrence, and then all the symptoms belonging to strangulated hernia of the acute form were present. There was constant bilious vomiting, attended with much straining; she complained mostly of tormina, and pain across the lower part of the abdomen, as well as in the tumour, which was very tense, and unusually intolerant of pressure at so early a period; pressure exercised on the abdomen did not, however, cause any pain, except during a paroxysm of tormina. There was thirst; the pulse was accelerated, and the heat of skin augmented.

I endeavoured to effect the taxis, but without any success. As there had been no evacuation from the bowels for twenty-four hours, a purgative enema was administered by means of the long tube, but it was not followed by any feculent discharge. At the expiration of two hours the symptoms had greatly advanced, and the case had become very urgent. The pulse had increased in frequency; the patient was much weaker, and more depressed; and the pain complained of in the tumour and lower part of the abdomen had augmented to an unusual degree. Efforts to accomplish the taxis were renewed, but with similar result, manipulation not seeming to make the slightest impression on the tumour.

Being reluctant to incur any delay in putting the ordinary auxiliary measures to the taxis into requisition, I proceeded at once to the operation, which was performed exactly five hours from the occurrence of the first symptom of strangulation.

Nothing worthy of special mention was noted during the steps of the operation. The contents of the sac were exclusively intestinal, there was hardly any fluid, and the stricture was so remarkably close as to render it nearly impossible to insert the nail of the finger within it. After the operation a small quantity of warm negus was administered.

On the following day I found her doing well. There was no return of the vomiting; abdomen free from tenderness and tension; tongue rather furred; some thirst; pulse nearly 100.

There had not been any evacuation from the bowels since the operation. She was placed on small doses of calomel, and a simple enema of warm water was ordered for the evening. Early the next morning the patient had three copious evacuations, and from this out she progressed rapidly. The calomel was continued for two or three days, when, having threatened to produce ptyalism, it was discontinued. The wound healed *almost* by the "first intention:" in the centre, where a little of the adipose tissue had bulged out, granulations sprang up, but there was no appreciable secretion of pus, and never any soreness or tension about the wound, so as to demand the application of a poultice. The upper and lower parts of the wound were healed in a week's time, and the whole was completely and permanently closed in about ten days.

On the fourteenth day after the operation the patient left her bed, and, throwing off all restraint, regardless of the consequences, she ate meat, drank wine, and went about the house engaging in her usual avocations. No evil resulted from this premature return to her *former habits and mode of living.*

The foregoing case affords an excellent example of the advantages of operating early in strangulated hernia: its rapid progress to recovery, unmarked by a single unfavourable circumstance, being obviously due to the operation not having been delayed. I determined on operating at once, and not waiting to put any of the ordinary auxiliaries into effect, from two considerations mainly:—First, the intense and increasing pain which existed in the tumour and the lower part of the abdomen. Second, the fact of the pulse having become rapid and feeble, accompanied by exhaustion in so short a time.

Many may be of opinion that it was hardly justifiable to resort to the operation so speedily, especially where the warm bath and the tobacco enema were not tried. Intense pain and rapid depression of the system are, however, symptoms which most, of all others, demand the operation, and forbid delay. But, apart from special considerations, or any regard to individual cases, we should weigh how far the delay involved in putting the auxiliaries into requisition is overbalanced by the advantage these measures afford. Every moment lost in returning the hernia adds to the urgency of the case, and places the patient in a less favourable state for the operation. And if delay is objectionable in all cases, on the ground of its adding to the risk of the operation, then such measures as necessitate delay are only justifiable where there is a good prospect of their succeeding. Now in femoral hernia the chance of success by the taxis is very small, all circumstances conspiring to ren-

der it ineffectual,—the shape of the tumour, the peculiar course the hernia takes, first passing downwards, then forwards, and finally upwards, thus presenting a curve, the concavity looking upwards, and especially the close and unyielding nature of the apertures which constrict it.

The case is different with respect to inguinal hernia: hence, whether we are to delay operating or not, the extent of the delay, and the confidence we are entitled to repose in the efficacy of measures auxiliary to the taxis in any given case of strangulated hernia, will depend on whether it be of the inguinal or femoral form. In inguinal hernia the taxis generally succeeds, because here the rings are large and yielding, and the course the hernia takes *comparatively direct;* hence the case will admit of the delay necessary for carrying out the auxiliary measures. The tobacco enema, an agent powerful for evil as for good, frequently succeeds in inguinal hernia, but it is irrational to suppose that it can exercise much influence in the femoral form, seeing that in it the constricting force is altogether *mechanical*, the parts being constituted of dense fibrous structures, without any intermingling of muscular tissue. The great contrast between inguinal and femoral hernia, with respect to the admissibility of delay, was well exemplified in a case which came recently under my notice, a full week having elapsed before a very large scrotal hernia, accompanied by vomiting and other symptoms of strangulation, could be returned. It follows, then, that while in the femoral, as in every other form of hernia, it is the surgeon's duty to give the taxis a fair trial; still, we must be very prompt in resorting to operation, owing to the close and unyielding nature of the constriction, which renders the taxis and its auxiliaries so unlikely to succeed.

Another question which may be asked in connexion with this case is, why was not the stricture relieved without opening the sac, strangulation having existed so short a time? If ever a case were suitable to Petit's method of operating, it is the one recited. But wherein consists the advantage of *not* opening the sac? It has been answered, that the chance of peritonitis is diminished thereby; but this opinion seems to rest on slender grounds, for when death results from the operation it is not often attributable to peritonitis. It is admitted on all sides that when the operation is undertaken late, the sac ought to be opened, but it should be remembered that the injury done to a coil of intestine depends rather on the degree of the constriction than on the length of time the constricting force has been

exercised. A few hours' strangulation may do more mischief to intestine or omentum, in one case, than a few days, in another, and unless the sac be opened the condition of its contents cannot, of course, be ascertained.

Again, in cases especially where both intestine and omentum are protruded, some peculiar mechanical condition may exist, which can neither be recognised nor remedied except by opening the sac. Further, inflammation and effusion of lymph sometimes take place at a very early period, when the constriction is great, and there has been much handling of the tumour, and it it obvious what the result must be, in such a case, of not opening the sac and breaking through the adhesions. I make no allusion to those cases of hernia in which a truss has been previously worn, since here the advantages of opening the sac and dividing the stricture within it can be hardly denied by the most strenuous supporters of Petit's principle of operation. Lastly, if the sac be not opened, what guarantee can there be for the complete and safe return of the intestine into the cavity of the abdomen?

For these reasons I think it a prudent measure to open the sac in *all* cases, at least of strangulated femoral hernia; and undoubtedly when, as has been already stated, the operation is performed early, it generally proves successful in simple uncomplicated cases.

But it sometimes happens that when the sac is opened, the intestine will present so healthy an appearance as to warrant its being returned, there not being discoverable the slightest evidence of gangrene nor of ulceration, and sometimes not even of much congestion, and yet it may afterwards give way, and thus lead to fæcal extravasation and its fearful consequences, or to artificial anus. The latter event is happily the more common of the two, and does not occur for some days after the operation. Everything appears to go on well at first: the bowels have, perhaps, been acting satisfactorily, and the wound often looking healthy, when, about the tenth day generally, feculent discharge is perceptible. The quantity at first is trifling, frequently not being more than what is sufficient to stain the dressings, but by degrees it increases, and amounts in some instances to a copious flow. This occurrence is most disagreeable and alarming to the patient, as well as troublesome to the surgeon.

But it is not the inconvenience, nor annoyance, nor the delay in the closing of the wound, caused by this untoward event, which renders it a source of especial concern, but the

danger to be apprehended of its being followed eventually by ulceration of the intestine, and consequent peritonitis. The subjoined case is an example of this serious result:—

A delicate woman, aged 40, had been liable to femoral hernia of the right side for five years; it only occasionally descended, but was quite reducible, and, though ignorant of the nature of the tumour, she always succeeded in returning it. Two days before her admission into hospital, after an unusual amount of walking, the hernia descended, and she completely failed to get it up.

At the time of her admission all the symptoms of strangulation were present: there were constipation of the bowels, constant vomiting, and pain about the umbilicus; the pulse was quick; there was thirst, heat of skin, and much depression. The hernial tumour was about the size of a walnut, and rested on Poupart's ligament, the bulbous extremity being above, from whence a narrow neck could be traced down to the saphenic opening. The skin was red and somewhat œdematous, the result, probably, of constant handling by the patient.

The taxis was tried, but failed; a purgative enema was then administered, and afterwards the taxis was again resorted to, yet without success. The operation was now proposed to her, but she refused to undergo it. On the next day the symptoms had somewhat increased; the constipation and vomiting continued; the pulse was quicker, the fever more marked, and there was slight tenderness across the hypogastrium.

The patient consented to the operation in the afternoon, it being the third day from the occurrence of strangulation. On opening the sac, the intestine was found to be slightly inflamed, and was coated with lymph at one or two points, yet there was nothing apparent to the eye that could be supposed to prohibit the fair return of the intestine into the cavity of the abdomen. At the end of three hours from the operation the patient had three or four evacuations.

All went on well until the sixth day after the operation, when the wound opened out and looked sloughy. Poultice and warm dressing were applied. On the next day the lips of the wound became everted, and were surrounded with a wide erysipelatous margin; in all other respects, however, the case progressed favourably.

Eighth day. She had a bad night; the stomach is irritable; tongue bright red and dry; pulse 112. The redness around the wound has increased; there is some diarrhœa, but no tenderness of abdomen.

Ninth day. She is much better; stomach tranquil; pulse slower.

Tenth day. There is a further improvement manifest. The redness around the wound has greatly diminished. On removing the dressings, some yellow matter like fæces was observed on the lint, and this led to the impression that an artificial anus was about to be established. In the evening the occurrence was rendered unmistakable by the amount of feculent discharge on the dressings. For two or three days the quantity of fæces which passed by the wound augmented, appearing chiefly during exertion, especially that of attempting to evacuate the bowels. It then began to gradually lessen, and the wound to granulate. At the end of eleven days the feculent discharge had entirely ceased, and the wound was, in great measure, cicatrized. In a short time the wound was completely healed, and the patient soon left the hospital.

She continued apparently in the enjoyment of good health for nearly three months, when she began to complain of pain in the bowels, some tenderness in the right iliac fossa, and dyspeptic symptoms. These gradually increased in severity, and, after lasting for some days, peritonitis suddenly supervened, and ran its course to a fatal termination, in thirty-six hours.

A post-mortem examination was made, when a perforating ulcer of the ilium, close to the spot which had constituted the artificial anus, was discovered.

This case contributes additional evidence in favour of operating early. Delay led here to inflammation and softening of the intestine, the effects of which proved permanent, causing perforation at two periods, viz., on the tenth day after operation, when it resulted in artificial anus, and at the end of three months, when it was followed by fatal peritonitis. It would appear, then, that artificial anus is evidence of a condition of the strangulated intestine (the result of delay in performing the operation) which is apt to lead eventually to extravasation of fæces into the cavity of the peritoneum, and consequent death. Hence it should influence very materially the ultimate prognosis that the surgeon may give.

Rupture of the intestine, from sloughing or ulceration, at an early period after the operation, is, of course, a more unfavourable event than either of the two mentioned, and, since its consequences can be obviated by not returning the part into the cavity of the abdomen, it becomes all important to be able to recognise that change of condition which might possibly be followed by rupture after the return of the intestine. When

the intestine is actually gangrenous, the change is readily recognised, the part being in general of a greenish colour, flaccid, having lost its polished surface, and the serum in the sac being brown and often fetid. But the strangulated part may be so far softened and otherwise altered in its physical characteristics, without exhibiting any actual morbid appearance, as to forbid its return, lest it should afterwards give way. The great guide to the recognition of that state of intestine which is contra-indicative to its return, is flaccidity and want of polish. The part may be perfectly black from ecchymosis, or purple from congestion, yet so long as it is firm and retains its polished surface, no fear need be apprehended of returning it fairly into the cavity of the abdomen.

The following case affords proof of this, and clearly demonstrates not only the safety of returning an ecchymosed intestine into the abdomen, but the essential distinguishing features between ecchymosis and gangrene.

A lady, aged 45, the mother of many children, had a femoral hernia of the right side for some time. She had been in the habit of wearing a truss, but injudiciously laid it aside. On one occasion, while making an exertion, the hernia protruded, and her efforts to return it proved unsuccessful. Shortly after this occurrence, symptoms of strangulation supervened, but, notwithstanding, she went about, exerted herself unusually, and, in consequence of being obliged to attend on an invalid, she had to stretch her body, and to make such efforts as necessarily exposed the hernia to pressure and contusion. During the entire night she seldom lay down; in the morning she was compelled to take to bed. The vomiting was very urgent; the bowels were obstinately constipated; and there was an excessive degree of twisting pain about the umbilicus. The tumour was remarkably tense, and very painful on pressure.

The taxis was tried, but failed; and, after some of the auxiliaries were employed without effect, the operation was proposed to the patient. She, however, refused to submit to it. Further efforts to reduce the hernia were then made, and, at the end of forty hours from the occurrence of the strangulation, the patient, seeing the inutility of all the measures which had been resorted to, consented to the operation.

Nothing unusual presented itself during the steps of the operation until the sac was opened, when there escaped a quantity of black blood, of the consistence of thick mucilage, and of the appearance of common shoe-blacking. There being no omentum, the intestine was then brought immediately into

view. It was of a perfectly black colour, but tense, firm, and smooth, and polished. There was not the slightest degree of fetor perceptible. Mr. Cusack and Mr. Adams, who were present, agreed that the condition of the intestine alluded to was the result *solely* of ecchymosis, induced partly by the extreme tightness of the constriction, and partly by the pressure and injury to which the tumour had been previously subjected, and gave it as their opinion that the intestine might be fairly returned into the cavity of the abdomen. When the stricture was divided, the intestine, which before was so tense, completely collapsed, and an indented line could be seen around it, corresponding with the previous point of constriction.

That the operation was, however, satisfactory in all results, was evidenced by the occurrence shortly afterwards of three or four alvine evacuations, unaided by any purgative or enema. On the third day after the operation a firm coagulum of blood was discharged along with the fæces, and, from its size and shape, there could be no doubt that it had been confined in the knuckle of intestine which had constituted the hernia, and proved to what an excessive amount of constriction and injury the part had been exposed.

The lady completely recovered, though her convalescence was somewhat protracted, and complicated with nervous and dyspeptic symptoms, which, however, were not altogether new features.

The last case which I shall recite shows the difference between lividity of intestine from congestion and the effect of gangrene.

A woman, aged 40, was recently admitted into Steevens' Hospital with strangulated femoral hernia of the right side. She stated that two months previously she perceived a small round tumour in the right groin, that it never occasioned any pain or inconvenience, and, as well as she could recollect, never retired, but remained stationary.

It appeared that on the evening before her admission, while standing at a table ironing some clothes, hardly making any exertion, she was seized with pain in the tumour, after which her stomach became sick, and she vomited. The nausea and vomiting continued incessantly during the night; she did not appear at the hospital until 4 o'clock in the afternoon of the following day.

On examination, the tumour was found to be of a very peculiar shape, so much so that, had it not been for the well-marked character of the symptoms, the nature of the case might

have been readily mistaken. It was unusually broad, as well as irregular, at the upper part, and there distinct fluctuation was perceptible. Not the least impression could be made on the hernia by manipulation; enemata failed to bring away any fæces; the vomiting was incessant; the pulse small and frequent, and there was much prostration. The operation was proposed to the patient, but would not be acceded to until 10 o'clock on the following morning, it being better than forty hours from the first symptom of strangulation.

The operative steps were accomplished with facility, the coverings of the hernia having been few and thin. On opening the sac, a quantity of a thin whitish fluid, resembling whey, escaped; there was no omentum present; the intestine was so livid as to cause some doubt at first as to its being sound, and no little hesitation regarding the propriety of returning it. Careful inspection of the part, however, showed that there was no actual change in it save that of colour; there were the normal firmness and polish, as well as absence of fœtor. It therefore became obvious that the lividity was due entirely to congestion, arising from an excessive degree of constricting force. The structure was so close that it was impossible to insert the point of the nail within it, and when its division was effected, the intestine collapsed, and presented a line of indentation deeper even than that observed in the preceding case.

No untoward symptom arose after the operation. The wound healed kindly and rapidly, and the patient, who had been delicate for some years, improved in health, and has continued ever since tolerably well.

Art. XIV.—*Cases in Midwifery from Dispensary and Private Practice.* By T. Purefoy, M. D., &c., Lucan.

CASES OF LABOUR COMPLICATED WITH HEMORRHAGE.

Case I.—A. E., taken in labour on the 7th of November, at 8 o'clock P. M., was delivered of a living infant at 3 o'clock on the evening of the next day: and, in six hours after the birth of the first child, a second was born. This woman was first visited on the morning of the 9th inst., when symptoms of the most alarming exhaustion were present: she stated, in a scarcely audible voice, that she had suffered under profuse hemorrhage during the night; that the placentæ were yet retained, but that the flooding had ceased for some hours; and that there had not been any bandage applied after the birth of the twins. As the

patient was apparently moribund, and in a state of extreme wretchedness, such suitable stimulants as could be procured were administered, aided by ergot, the application of the roller, warmth to the extremities, and care taken that no further loss of blood should take place; but the urgent symptoms of approaching death deterred me from undertaking the removal of the placentæ. The result was as anticipated, and the poor sufferer expired shortly after she had been visited.

Case II.—M. H. has had slight discharges of blood, per vaginam, during the past five weeks, and has now reached the full period of pregnancy for the fourth time.

On the 15th of December I was hurriedly called to this woman's aid, who was extremely exhausted by profuse loss of blood, which had recurred frequently during the night, accompanied by slight labour pains, and proceeded so far as to occasion symptoms of the most imminent danger. Wine was cautiously given: the hand introduced into the vagina, which was filled with coagula; the soft parts were found much relaxed, and the os uteri so dilated as to admit the hand with ease by the edge of the placenta, which was found presenting. The child was turned without further delay, and when the legs had been brought into the vagina, the body was then expelled by the natural efforts. The placenta quickly followed, together with a large quantity of coagula; the uterus contracted well and firmly, no untoward symptom followed, and the woman made a good recovery, although, for a time, her blanched and sallow countenance gave decided indication of the injurious consequence of the loss which she had sustained.

Case III.—Mrs. S., supposed to have come to her full time, being pregnant of her fifth child, was suddenly attacked with flooding, at an early hour in the morning, which continued during the day. She was attended by an ignorant midwife, who merely employed acid drinks, and wine occasionally. At visit in the evening, she was found in the last stage of exhaustion, exhibiting the fearful train of symptoms—incessant restlessness, sighing, urgent entreaties for the free access of cold air, and a supply of cold drink; occasional low delirium and faintness, with frequent complaint of heat and pain of head, and ringing sounds in the ears. Upon examination, the os uteri was found slightly dilated, so as to admit one or two fingers, and the vagina filled with clots. The vagina being emptied, and the hemorrhage having ceased, the plug was immediately employed, warmth applied to the extremities, and stimulants

given with care. However, no rally took place, and the patient sank without further loss of blood externally, having expired immediately after having made an excited and feeble effort to sit up in bed.

No post-mortem examination was allowed; but a mere manual examination satisfactorily ascertained that the fatal hemorrhage was the result of a placental presentation.

Case IV.—Mrs. W., first labour; visited on the 2nd of May, at 2 o'clock A. M. The liquor amnii has been draining off for the past six days, but labour pains did not come on until within the last sixteen hours, and have since recurred at regular intervals. The progress of the labour being tedious and unsatisfactory, probably the result of a thick and unyielding state of the anterior lip of the os uteri, whilst the head presented naturally,—gentle pressure was made with the fingers against this part, during a pain, until it was withdrawn above the head, and full dilatation of the os uteri effected. Aperient enemata were employed as auxiliaries, and, by these means, strong labour pains induced, yet the head remained stationary. Although the pulsations of the fœtal heart could not be heard, the forceps and tractor were carefully employed to aid the descent of the head, when it appeared that the natural efforts were insufficient to complete the labour, but in vain; the delivery of the head was found impracticable, and the crotchet was at last resorted to, under circumstances unequivocally calling for such interference. As the placenta was unduly retained, by hour-glass contraction, above the neck of the womb, it was necessary to introduce the hand for its removal. In a few minutes after the removal of the placenta, alarming flooding followed, whilst every possible precaution was being used to prevent such a casualty. The free use of cold water, cold air, pressure above the fundus uteri, arrested the flow of blood temporarily, but it recurred again in a continued stream, so that life must soon have ebbed away, had not the hand, being promptly introduced within the uterus, secured firm and permanent contraction, and so arrested the flooding. Subsequent recovery was favourable and progressive.

Case V.—A strong and healthy labourer's wife, having been confined of her seventh child, made a good recovery, and left her bed on the fifth day; unfortunately, on the following day she suffered under extreme alarm, occasioned by seeing her husband engaged in conflict with his neighbour; she immemediately became faint, and, whilst in this state, flooding came

on. The discharge of blood ceased after a little time, under the influence of cold applications and rest, but recurred so violently on the next day as to occasion much exhaustion.

This woman was first visited on the third day after the hemorrhagic attack, and the eighth after confinement: she lay upon her back; the countenance pale, sallow, and of anxious expression; although there was continued stupor, yet, when loudly interrogated, she answered quite correctly; the surface of the body generally was moist; pulse 100 to 110, soft and compressible; respiration laborious; breasts small and flaccid; abdomen full and soft, but free from pain or tenderness; the secretion of milk and lochial discharge both arrested. The last return of hemorrhage was followed by vomiting and convulsions, but these symptoms have not since recurred; the tongue is loaded and moist; thirst urgent; bowels free.

Symptoms progressively became more unfavourable: the pulse became small and rapid; tongue dry and brown; abdomen tympanitic, and tender under pressure in the right iliac region. Towards the termination of the disease, very tender, painful, and circumscribed tumours occupied the inner side of the wrist of the right arm. Pure typhoid symptoms became predominant, and the patient died, in about a fortnight from the occurrence of the shock which led to this fatal result. The treatment consisted in the use of wine and suitable nourishment, with counter-irritation to relieve cerebral symptoms, attention to the bowels, and, at the onset, mild mercurial alteratives and anodyne stupes, when her suffering required them.

Case VI.—M. B., a strong, healthy, young woman, has been in labour for some hours. The feet were found low in the vagina; the soft parts so well dilated that nothing was necessary, apparently, to complete the labour but effective pains, as uterine action had been suspended for some hours previous to my visit. The feet were now readily brought down; slight pains expelled the body of the infant, but the usual delay occurred in the delivery of the head. The birth of a still-born child, however, was effected in about forty minutes from the time when assistance was first given. The placenta being retained beyond the usual time, an examination was made, when it was found that a ring stricture, which existed at the neck of the uterus, occasioned its retention. The stricture soon yielded to gentle dilatation with the fingers, the placenta was expelled by the natural efforts, but in about fifteen minutes after its expulsion a fearful flow of blood followed, wholly unaccompanied by pain. The usual appliances, cold air, cold water,

ergot, and continued steady pressure made from above the fundus uteri downwards, succeeded in arresting the hemorrhage, and saving the life of the poor sufferer, who was altogether ignorant of what had occurred.

Unquestionably, hemorrhage is one of the most alarming and most dangerous complications to which the parturient female is liable. Whilst hemorrhage may occur during the progress of any labour, however favourable as to its progress in every other respect, experience proves that it is most likely to occur where there is a plurality of children.

The first case which I have given affords a sad illustration in proof of this opinion. Here the birth of the first infant was not unduly protracted, but, unfortunately, the delivery of the second was too long neglected, thus favouring an atonic and exhausted state of the uterus, directly leading to retention of the placentæ, and fatal flooding as the result. The circumstances in which this patient was found at the first visit were truly appalling, and exactly such as to occasion the deepest anxiety upon the part of her medical attendant, as to *what was his duty under these circumstances?*—the poor sufferer apparently moribund, the placentæ retained for some hours, the external hemorrhage arrested, as the result of mere collapse, or exhaustion of the system; whilst the moderate size of the uterus contra-indicated internal or concealed hemorrhage. These were the indications, clearly pointing out the necessity for extreme caution in using manual interference for the removal of the placentæ. One ounce of blood lost during such interference might at once extinguish life; whilst, on the other hand, there remained a faint hope that the temporary aid of stimulants might enable the system to recover from the shock it had sustained, and so place the patient in a state much more favourable for undergoing the necessary operation of removing the placentæ. Immediate interference was attended by the risk of immediate death, whilst no existing symptom forbad *a little delay;* and, in so doing, opportunity was obtained for the employment of such remedies as might best tend to sustain and re-invigorate the exhausted vital powers. The latter course was thought the most prudent, and so adopted, but without ultimate success. Every available means were employed to support life, excite uterine contraction, and prevent further loss of blood, with a view to the removal of the placentæ, so soon as the patient appeared in a state fit to undergo such interference; but the shock to the system was too great, and the exhaustion induced too profound to be resisted by any remedial means.

I have removed the placenta under exactly similar circumstances, where the birth was single, and the woman young and healthy, yet she did not survive the operation more than an hour, and sank exhausted without further loss of blood. It may be objected that the ergot, by reason of its sedative influence, was not suited to this case. In answer, I would reply that I trusted to wine and other fit stimulants to obviate the sedative effect of the ergot, hoping that its specific operation in inducing uterine action might be thus happily obtained, in a case of such extreme urgency.

In contrasting the second case with the first recorded, we have a striking proof of the complete success attendant upon judicious interference, exercised at the proper moment. The lesson taught is as obvious as it is instructive,—timely and prompt assistance, in one instance, instrumental in preserving life; whilst, on the other hand, the absence of such aid becomes a cause of the loss of life. In the second case, the woman's life depended altogether upon the speedy termination of the labour, and this consummation, so much to be desired, was accomplished by turning and delivering the child, thus expediting the expulsion of the placenta, permanent contraction of the uterus, and the complete and permanent arrest of uterine hemorrhage. Here it may be truly stated that the accoucheur's promptness of decision and skill in acting are never so severely and seriously tried as under the circumstances just described, when but a few moments are left him to decide as to whether he will allow his patient to die undelivered, or attempt the delivery at a moment when he has just cause to fear that she has not strength to survive the operation, but may *die in his hands*. The responsibility of this trying hour can never be duly estimated by any one who has not been compelled to reason, to decide, and to act with energy and promptness upon that decision, within the brief space of a few fleeting minutes, under the full persuasion that any error in judgment or practice upon his part may occasion the death of his patient. To lay down fixed rules for such emergencies would be equally rash and unprofitable. Hence it becomes more imperative that the practitioner in midwifery should be fully qualified in every respect for the efficient discharge of his most important duties in such overwhelming emergencies.

The third case but too forcibly exhibits the sad consequences of ignorance and inactivity upon the part of the unfortunate patient's attendant, in the hour of extreme need: since there is no reason to doubt that, by expediting the delivery, and securing the expulsion of the placenta, and efficient

contraction of the womb, the patient's life would have been saved.

The fourth case indirectly proves the advantage of preserving the membranes unbroken to an advanced period of the labour, as there is little room to doubt that the too early discharge of the liquor amnii, together with the advanced age of the patient, operated injuriously on the progress of labour, rendering it more slow and lingering than it would have been under ordinary circumstances. I have found that in many cases of slow dilatation of the os uteri, the pressure of two fingers against the unexpanded or undilated anterior lip of the os, made occasionally during a pain, has had a decidedly good effect, tending directly to promote full dilatation, and thus to obviate the ill effects of unduly protracted labour. This practice has been opposed by good authority, I am aware, so that I merely venture to give the result of my own experience upon what appears to me a subject of considerable practical importance. In passing, I would observe that, in very many instances, it would appear we have the power, to a certain extent, of directing, or, as it were, concentrating the expulsive efforts of the uterus towards a certain point; and that, under certain circumstances, we may exercise this power much to the advantage of our patient. Frequently have I found that, where the placenta has been retained for several hours, through mere atony of the uterus, simply dilating the vagina and os has proved quite sufficient to excite vigorous uterine action and speedy expulsion of the placenta. Again, in lingering labour, with thick, soft, and unexpanded anterior uterine lip, I have no doubt that dilatation of the os and a favourable termination of labour may be promoted by aid, *judiciously given*, as already suggested. The irregular uterine contraction which followed the birth of the child is, unfortunately, a frequent occurrence in impracticable labour, and is an untoward event, which we may reasonably fear when the uterus has been called upon to make protracted, powerful, and unavailing efforts to expel its contents.

In such cases it becomes a question of moment, whether we should defer the removal of the placenta, as is usual, for an hour, or interfere more promptly where we have cause to fear uterine exhaustion, and irregular contraction, as its consequence? The longer engaged in the practice of midwifery, the more fully shall we be convinced that *sound principles*, rather than *strict rules*, must guide us in the management of every individual case.

Although much zeal and ability have been lately expended

in advocating a different plan of treatment in cases of placenta prævia, from that which is here advocated, I am obliged to state candidly that my judgment is not yet fully persuaded of the propriety of changing the mode of treatment which hitherto I have successfully carried out for many years. It is scarcely necessary to observe, that these remarks refer solely to the management of placental presentations, occurring during labour, at the full period of pregnancy.

The fifth case affords an instructive example of fatal uterine hemorrhage, occurring on the sixth day after delivery, under the influence of strong mental excitement. The depressing influence of the mental shock, together with that induced by excessive loss of blood, were causes but too well adapted to induce the fatal form of disease under which this poor woman sank. We are again reminded by the sixth case how seldom we meet with a *solitary deviation* from the natural course of labour; here we find a footling case complicated with hour-glass contraction of the uterus and post-partum hemorrhage.

In addition to these brief remarks, I shall only add that the management of the parturient female, immediately after the completion of the third stage of labour, has always appeared to me a matter of the utmost moment as regards the interests of the patient. Too often during the joy and excitement naturally consequent upon "a safe delivery," and the birth of "baby," friends forget for a time the very critical circumstances of the mother, whose life's blood has, upon some unhappy occasions, ebbed away whilst surrounded by rejoicing friends.

Most important directions as to the management of the placental stage of labour are to be found in the various treatises upon the subject of midwifery; but, perhaps, none have given more explicit or important directions upon this subject than Drs. Sinclair and Johnston, in their "Practical Midwifery."

During a period of five-and-twenty years I have followed the plan of treatment advocated by them, in dispensary and private practice, and feel more fully convinced every day that the best and safest practice, in every case, is to secure, by manual pressure, efficient and permanent contraction of the uterus, *before* the binder is applied. To avoid being misunderstood, I will just state that, so soon as the child's head is born, whether by the natural efforts or by instrumental aid, the nurse is directed to attend to the expulsion of the body and limbs, whilst with my right hand the perineum is guarded, and the contraction of the uterus duly attended to by proper manipulation with the left, consisting in gentle continued pressure made over the fundus uteri with the open hand, from above down-

wards, ever carefully varied according to the condition of the uterus, and the symptoms present; the child being born, the right hand is then free to examine the pulsation in the cord; direct when the nurse is to divide and tie it, and, at the same time, indicate exactly, with the finger and thumb, where the ligature is to be applied, inspecting every step of the operation as the nurse proceeds. If matters go on favourably, manual pressure is given up, and the binder applied in twenty or thirty minutes after the completion of labour. On the contrary, if hemorrhage has occurred, or is threatened, the guarded pressure with the left hand is continued for an hour after untoward symptoms have disappeared, and the binder then put on, aided in some instances by a pad, so judiciously applied as to assist in keeping up uterine contraction.

The general interest which this subject is invested with is my only excuse for intruding my opinions or practice upon the attention of others.

Art. XV.—*Pathological Researches.* By B. Wills Richardson, F. R. C. S. I., Member of the Court of Examiners of the Royal College of Surgeons in Ireland; one of the Secretaries to the Surgical Society of Ireland; Surgeon to the Adelaide Hospital.

(*Continued from* vol. xxvii., p. 281.)

4. EXCISION OF A PORTION OF THE LOWER JAW; RAPID RECURRENCE OF THE DISEASE AFTER THE OPERATION.

Sarah Barter, aged 28, a dark-complexioned woman, admitted into the Adelaide Hospital on February 6, 1859.

Ten weeks before this she was attacked with pain in two of the left back teeth of the lower jaw, which pain not subsiding, she had, at the expiration of a month, one of these teeth extracted. Scarcely any blood was lost from the operation. A day or two after the tooth was removed she, for the first time, perceived "a lump on the gum," corresponding to its empty alveolus, and a discharge of matter from the socket itself.

One fortnight after the first tumour was discovered she perceived "another lump" on the gum over the posterior surface of the same alveolus. Both tumours grew rapidly; the posterior one, however, more so than the other. Both bled freely, particularly when handled, and they were not painful except on these occasions. The pain was of a "stinging" character, and more severe in the gums than in the tumours.

She never met with an injury of the jaw, and is quite positive that the tumours first made their appearance at the periods above mentioned. Subsequently she began to lose flesh and strength, so that she was induced to seek admission into hospital.

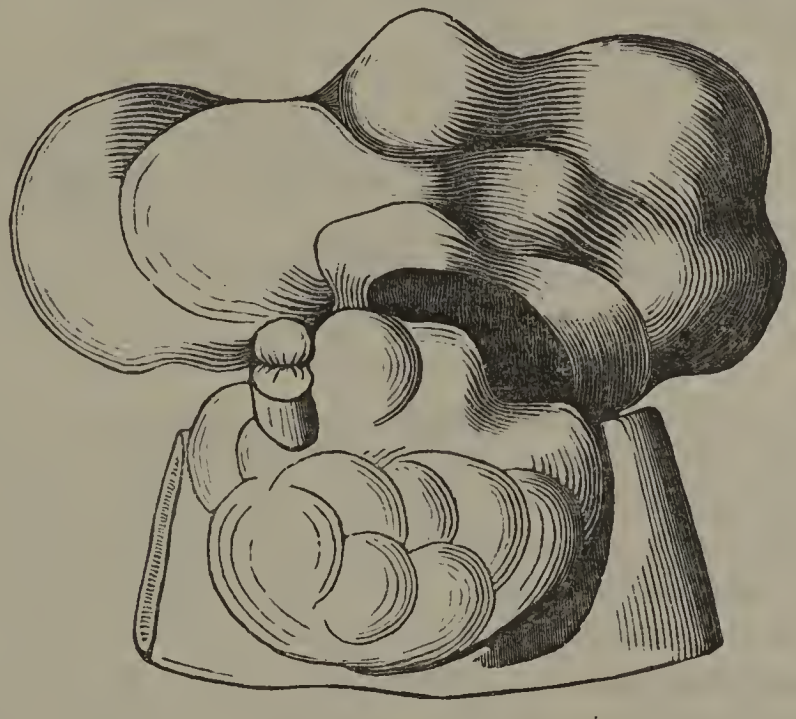
Present symptoms, March 1, 1859: Countenance of a sallow hue; dark brown eyes; left side of face, corresponding to lower maxilla, is prominent, but not discoloured, forming a swelling about the size of a Spanish chestnut. The edge of the jaw immediately beneath this eminence is slightly thickened and tender to the touch. On opening the mouth it was at once evident that the protuberance of the cheek was caused by a growth from the external surface of the lower jaw. This tumour was somewhat pedunculated, and its connexion to the jaw corresponded to about the posterior bicuspid and first molar teeth. It was, of course, somewhat less in size than the swelling of the cheek, was whitish, pretty firm, and nodulated on the surface, and, on further examination, was found to be connected by a narrow isthmus of a softer structure, springing from the absorbed alveolus, with another large, soft, fungoid, dirty-whitish, pedunculated mass. This latter tumour occupied the greater part of the floor of the mouth, and covered nearly the whole tongue, rendering articulation indistinct. It extended backwards to the soft palate; its attachment to the gum corresponded to that of the anterior tumour, and descended to within half an inch of the margin of the bone. One tooth is quite loose, and partly imbedded in the connecting portion of the tumours. The posterior growth bleeds upon the slightest handling, and both are very sensitive to the touch, which is followed by stinging pains in the bone corresponding to their attachments. The lymphatic glands are not enlarged, neither are the soft parts adherent in any situation to the tumours. Pulse 104; bowels regular; tongue clean; urine free from albumen.

Although the history of this case led to the strong suspicion that the tumours were malignant, yet, when we took into consideration that non-malignant growths of the lower jaw have been observed, with symptoms somewhat similar; and when we also considered the narrow connexion of the tumours with the bone, as well as the apparent freedom of the neighbouring soft parts and lymphatic glands from contamination,—we felt justified in recommending an operation, and that success would most likely be obtained by excising a portion of the jaw, so as to insure as complete isolation as possible of the attachment of the tumours. In this opinion our consultant, Mr.

Smyly, agreed. Accordingly, the operation was performed on the 2nd of March last. The patient was kept under the influence of chloroform, in a semi-recumbent position, whilst the first incisions were being made. The knife was passed down the centre of the lip to the chin, and next, horizontally, towards the angle of the jaw. The flap having been raised, the tumours were seen perfectly free from connexion with the neighbouring parts. I now removed two teeth, one at each end of the alveolar attachments of the tumours, then freed the bone for the saw. In this case I did not use the chain-saw, having seen it lock and break on one or two occasions, but employed the small tenon-backed saw, similar to that figured in Mr. Fergusson's Surgery. With this instrument the bone was divided in a few seconds.

Fig. 7 is a correct representation of the tumours, with the portion of the jaw from which they sprang, the larger mass

Fig. 7.



being the posterior growth which lay over the tongue. It is unnecessary to detail the subsequent steps of the operation and after-treatment; suffice it to say that there was scarcely any blood lost, and that a considerable portion of the wound was united in a few days.

An examination of the tumours was made immediately after the operation. When cut into, they had, to the naked eye, all the appearances of medullary fungus, and the microscopic examination showed that the mass was composed of a mixture

of cells of various shapes and sizes, having remarkably large nuclei. Some of these cells contained two nuclei, and others were apparently undergoing a process of fatty degeneration, being loaded with oil globules. In Fig. 8 these structures are carefully and correctly illustrated, and contrast remarkably with

Fig. 8[a].

the small round and oval nuclei of the medullary diseases, represented in my former communication in this Journal[b].

The ligature of the facial artery came away on the 24th of March, after which she was sent to the country, the wound being all healed, with the exception of the site of the ligature. She again presented herself at the hospital in a few days, when it was evident that the cut extremity of the anterior portion of the jaw was enlarging rapidly, and that a growth of some kind was occupying the gap. She now complained of a neuralgic pain in the back of the right thigh.

May 20. A great change has taken place in both her general and local symptoms. A large bleeding fungus occupies the site of the operation; her cachexia is extreme. A flat tumour has made its appearance between the right tuber ischii

[a] Examined with Smith and Beck's one-fifth, and magnified 240 linear.
[b] Vol. xxvii., page 279.

and great trochanter, apparently engaging the sciatic nerve, and causing the most severe neuralgia. Pulse frequent. The only treatment now applicable was the administration of anodynes, supporting the strength, and the local application of styptics.

She lingered until the 23rd of July, when death put an end to her sufferings, the fatal termination having been hastened by the hemorrhage from the new fungus in the mouth. A post-mortem examination could not be obtained.

I have not hesitated to place this case on record, as I believe, notwithstanding we have arrived at the middle of the nineteenth century, that we are sadly deficient in trustworthy statistics of operations for malignant disease. The vast majority of the members of our profession are tempted, through unintentional prejudice, to give us only the "sunny side" of the picture, and to suppress the recurrent cases; and when they do publish their *successful* operations for cancerous disease, these are generally published too soon. Moreover, "doubts," as Dr. Bennett observes, "must always exist regarding such cases so long as no authentic record is preserved of the minute examination of the tumour removed. Every experienced surgeon who adopts a favourable or unfavourable view of this question can point to crowds of cases in support of his opinion; but when he is asked whether the growths operated upon be truly cancerous or not, it will be found that there are no positive grounds on which to form a conclusion. He *considered* it to be cancer,—nothing more."

5. FOREIGN BODIES IN THE EYE.

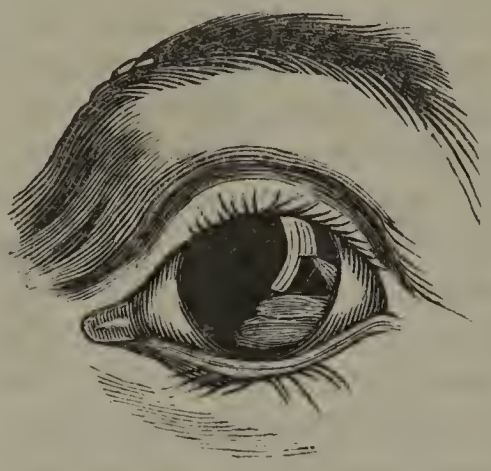
The subject of this case was an out-pensioner of Greenwich Hospital, and one of the few surviving heroes of the battle of Trafalgar, where he fought under Lord Collingwood in the "Royal Sovereign," the first ship to engage the enemy and break their line. The following is a short account of his history:—

James Graham, aged 71, pensioner, admitted into the Adelaide Hospital, February 15, 1859, with an inflamed bunion, corresponding to the metacarpo-phalangeal joint of the left great toe. This subsequently yielded to rest, poulticing, and laxatives.

My attention was attracted to the state of his eyes, one of which, the right, was collapsed, and covered by the closed lids. The left eye, however, presented some remarkably interesting appearances.

On looking through the cornea, three foreign bodies were distinctly observed behind it. The cornea itself is very clear, excepting at its circumference, where it is somewhat degenerated. The iris has disappeared; but behind the margin of

Fig. 9.



the cornea, there is a narrow band, resembling a portion of that structure. The foreign substances are, therefore, situated in a cavity resulting from the anterior and posterior chambers being thrown into one by the removal of the iris. The extraneous bodies are apparently incapsulated by a delicate membrane, which is most evident inferiorly. Entangled with the foreign substances is a piece of pigmental epithelium, or, possibly, a portion of the iris, having its pigmental surface anterior. Vision is very fair, and he can read the smallest print with a double convex lens, and at present works as a saddler.

Graham, having escaped injury at the battle of Trafalgar, subsequently entered the Royal Artillery, in which branch of the service he remained until our struggle with America, when he re-entered the Royal Navy, and was sent to Canada as a petty officer, and formed one of the crew of the Detroit in the action with the Americans on Lake Erie in 1813. He was standing near Captain Barclay when some splinters, broken off by a round-shot, struck his right eye and destroyed it; others passed through the bridge of the nose and entered the left eye, where they still remain, and are represented in Fig. 9. Having been taken prisoner, he was placed under arrest, but he was not submitted to any treatment: no mercury, no bleeding. After the expiration of four days, some sight returned in the eye, which gradually improved, being an admirable instance of nature's surgery, for, with the exception of the escape of some pieces of bone from the nose, his cure was rapid and uninterrupted.

6. Intra-uterine periostitis; necrosis and separation of the upper epiphysis of the tibia.

I am indebted to Dr. M'Clintock for the interesting and valuable specimen of intra-uterine disease represented in Fig. 10.

Fig. 10.

E. A., aged 30, the mother of the infant from whom this preparation was obtained, was confined of this, her fifth child, in the month of June, 1858. She had been ten years married, and all her other children were born alive and healthy. She was not conscious of having received any fright or injury to account for the disease in the child's leg.

The child, a full-grown male, was born dead at the full term, but to all appearance had been recently alive. Attention was at once drawn to the swollen and inflamed state of the right leg, which presented a distinct sense of fluctuation both anteriorly and posteriorly, and had a middling-sized bulla below the patella, the whole presenting a well-marked erysipelatous appearance. On making an incision into the diseased parts, a large quantity of pus was discharged. When the matter had been all removed, it was found that the soft parts, corresponding to the greater portion of the tibia, were completely disintegrated, scarcely any trace of muscular structure being discernible. Further examination discovered that almost all the tibial periosteum was in a sloughy condition, and had separated from the bone, the latter being whiter than natural, and necrosed. A small extent, however, of the membrane, inferiorly, was intensely inflamed, but still adherent to the bone. Superiorly the tibial epiphysis was almost completely separated from the shaft, being merely connected to it by a few shreds of membrane. The dotted lines in the illustration mark out the necrosed portion of the tibia, as well as the detached epiphysis.

As a specimen of intra-uterine disease, this case is of great

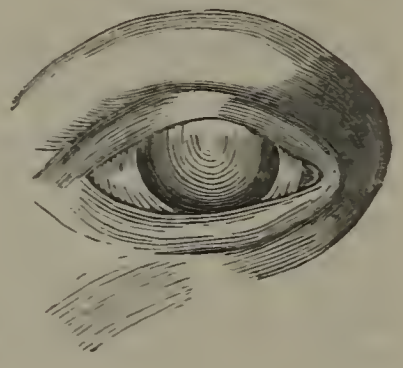
interest, and well worthy of being recorded. Whether it was originally a case of superficial inflammation, subsequently engaging the deeper structures, or a case of periostitis, or osteitis followed by disease of the neighbouring soft parts, I will not take upon myself to say: suffice it to mention that the pathological appearances presented a strong analogy to some of those cases of periostitis, with sloughing of the membrane, occasionally met with in the child or adult.

7. CONGENITAL OPACITY OF THE CORNEA, WITH ADHESION OF THE IRIS.

I am likewise indebted to Dr. M'Clintock for the coloured drawing (by Conolly) from which the accompanying illustration is copied. The drawing I exhibited at one of the meetings of the Surgical Society of Ireland[a].

The mother was a patient in the Lying-in Hospital, where the child was born alive and healthy. On examining its eyes, it was found that the right cornea was whitish and opaque. In addition to this change in the structure of the cornea, it was adherent at its posterior surface to the iris. The opposite eye was perfectly healthy.

Fig. 11.



These two cases cannot fail to interest those who have studied the diseases of the human fœtus, and they illustrate, in a remarkable manner, the similarity between some, at least, of the diseases of the fœtus and those that occur after birth. In the first case we have the characteristic appearances of a disease that may occur at any period of life; and, in the second, a change in the structure of the cornea, or, possibly, a new structure altogether, with adherent iris, probably the result of a morbid process identical with that which also takes place in either the child or adult. It would not be safe, however, to speak too positively as to the actual structure of this opaque cornea, a histological examination being necessary to decide the point, at least with accuracy.

[a] Dublin Medical Press.

Art. XVI.—*Contributions to the Surgical History of Syphilis.* I. *On Syphilitic Fungus of the Testicle.* By James F. West, Surgeon to the Queen's Hospital, Birmingham.

The occurrence of fungus of the testicle as one of the sequelæ of syphilis is sufficiently rare to warrant the detailed narrative of two cases of this interesting form of disease, which it has fallen to my lot to witness,

Mr. de Meric, of the Royal Free Hospital, London, while relating the history of a case which came under his notice[a], says that "he considered that this symptom had not previously presented itself to any surgeon, judging from the silence of authors who have written on the syphilitic disease," until he read the notes of a case which is reported by M. Rollet, Chief Surgeon of the Venereal Hospital at Lyons, and which he proceeds to give *in extenso*. The credit of having elucidated this symptom of secondary syphilis he thus appears to attribute to M. Rollet. However, the subject has received great attention from Mr. Hamilton, of the Richmond Hospital, Dublin, and to him we are indebted for a very able and complete description of the symptoms and pathology of syphilitic testicle.

I cannot think that this disease is so very rarely met with as one of the manifestations of constitutional syphilis, though, owing to the early period at which it is usually presented to our notice, and to the more improved method we have of dealing with it, we do not find it often proceeding to extensive disorganization, with consequent entire extrusion of the testis from the scrotum.

Testes so affected are generally amenable to treatment, and rarely call for removal by the knife, and, therefore, we have very seldom opportunities of examining them as pathological specimens. The destruction had, in the two cases which I am about to relate, proceeded to so great an extent that the testes had entirely lost their virile power, the fungus had arrived at such a size, and was so thoroughly adherent to the scrotum over a large extent, that it would have been impossible, even after slicing away a large segment of the testicle, according to the recommendation of Professor Syme, to have secured a sufficient quantity of the scrotum to form a covering for the remaining portion of the testes; and, moreover, the health of the patient was in each case so much deteriorated by long-continued discharge, and by often recurring hectic, that some decided

[a] *Vide* Lancet, March 19, 1859.

steps were necessary to prevent the patients dying before any local measures of relief could be adopted.

The first case occurred in the practice of my esteemed colleague, Mr. Langston Parker, and to his kindness I am indebted for the permission to bring the history under the notice of the medical profession. The second was under my own immediate care, in the wards of the Queen's Hospital, about two years subsequently. Both afford very marked evidence of the syphilitic cachexia; and although in the first case the phenomena of secondary and tertiary syphilis were not absolutely present at the time of the attack of the fungus of the testicle, still, they had undoubtedly shown themselves more than once since the existence of the primary sore, and in the second case they were found to exist simultaneously with the onset and progress of the syphilitic disease in the testicle, and even to recur after the wasted and inert organ had been removed.

Case I.—James Herrick, aged 24, labourer, was admitted into the Queen's Hospital under Mr. Langston Parker, September 23, 1856.

He states that, eight months ago, his testicles were squeezed by a man with whom he was "*larking*." He immediately fainted, and subsequently great pain and swelling came on. These symptoms were speedily relieved by warm applications, and he suffered nothing further for three months: pain then recurred, and has continued more or less ever since, and, about a month ago, a small "*boil*" formed on the anterior aspect of the left testicle. This soon suppurated, pus was discharged, and an ulcer formed in this situation which has since remained. His health is now considerably deteriorated, and he looks pale and delicate: both testicles are enlarged, and very sensitive to the touch; the left is as big as a man's fist, and on its front is found an ulcer, the size of a shilling, with bluish, unhealthy, indurated margin; the scrotum, being at the edges of the ulcer, firmly adherent to the testis. He had syphilis (sores and bubo) some seven years ago, and has since suffered with sore throat, and scaly cutaneous eruptions, at various times.

He was ordered full diet; to have a bread poultice, to which one drachm of liquor plumbi subacetatis was added, applied three times a day, and to take ten grains of Plummer's pill each night; no perceptible improvement took place during the first ten days in the left testicle, but the right became smaller and softer. More active mercurials were then ordered, and a weak lotion of lunar caustic in place of the bread poultice with liquor plumbi. By October 11th the man was thoroughly under the influence of mercury, but the left testicle was much worse;

another ragged ulcer had formed below the previous one, and the testis was very much enlarged. Wine and nourishment were freely given to the patient, who now began to need much support; the mercury was stopped, and also the astringent lotion, and in its place a poultice, composed of equal parts of charcoal and linseed meal, was used, but all without benefit, for the ulceration, attended with profuse suppuration of a fetid character, and in which no spermatozoa could be found, continued, until at last, on the 18th inst., the testicle was completely denuded of its scrotal covering.

On that day Mr. Parker determined, after consultation with his colleagues, to perform castration, and accordingly he removed the testis by an oval incision, which included a considerable extent of the unhealthy scrotal integument around the ulcer (having previously passed a needle, armed with a double ligature, through the cord, and tied the spermatic vessels *en masse* between the two knots), and then divided the cord above the point of ligature. Comparatively little blood was lost, and the lips of the wound were approximated by four sutures, and strapping applied as soon as all oozing appeared to have ceased.

Three hours after the patient had been removed to bed, bleeding of a fluid arterial character came on: a saturated solution of alum, ice, and pressure over the whole surface, were employed, but without success; the hemorrhage became violent, and it was therefore necessary to remove the straps of the sutures, and to seek for the bleeding vessel. Blood issued, *per saltum*, from the cord, but, as its exact source could not be determined, Mr. Parker preferred applying pressure over the cord, higher up towards the internal abdominal ring, by means of a large branch tourniquet. This proceeding soon checked the hemorrhage, and scarcely any blood was lost afterwards.

The loss of blood had seriously lowered the man, and more than once he was at the point of death through syncope, but was restored by wine and brandy. Towards night he rallied a little; the wine which he had taken disagreed with him, and he was violently sick. The parts were left exposed to the air, and iced water kept constantly applied. He was ordered to take half a grain of the muriate of morphia at bed-time, and an ounce of a mixture containing one drachm of sesquicarbonate of ammonia, dissolved in eight ounces of water, every third hour, in effervescence with ten grains of citric acid.

October 19th. He passed a restless night, and complained constantly of the tourniquet: no alteration in its situation was made, and the man was requested to rest as quietly as possible

in the recumbent position. The catheter was necessary in the morning, and again at night.

On examination, the testicle was found to be entirely altered in texture, and very much hardened in consistence; scarcely any trace of the tubuli seminiferi remained, but throughout the body of the testis and also the epidydimis, tubercles of yellowish lymph, irregular in form, and almost cartilaginous in substance, were observed; the outer surface of the testis was coated by a layer of recent fibrinous granulations, to the extent of about a quarter of an inch, and the tunica albuginea and tunica vaginalis were so adherent to the testis in nearly every part as to appear almost an integral part of it.

October 20th. As there was no appearance of bleeding, the tourniquet was loosened.

21st. Suppuration is commencing about the wound, and slight purulent discharge occurs from the urethra when the catheter is passed. He looks less anemic, and has evidently more power; straps of adhesive plaster were used to bring the parts somewhat into position, but, owing to the size of the right testicle, the retraction of the integument, and the amount of clot not yet discharged, this was somewhat difficult. The tourniquet was now removed. He was ordered a mutton-chop and a pint of porter.

22nd. Going on well; suppuration copious and healthy.

23rd. Straps were removed, and fresh ones applied, the parts being almost approximated; his bowels have not been moved since the operation, and his urine, which he passed yesterday without assistance, is now retained; to have ten grains of compound rhubarb pill immediately, and to have a catheter introduced.

24th. Going on well; urine passes freely; bowels actively moved.

25th. Parts can be brought together without difficulty; copious discharge of healthy pus; he feels stronger and can move about in bed; appetite good; bowels regular; urine abundant and free.

28th. Health good; fresh straps are applied each day, and the parts brought well into apposition; a small yellow spot of ulceration which exists on the inner side of the right testicle is to be touched with sulphate of copper.

November 1st. The ligatures have not yet come away; parts are now nearly united; discharge very slight; the spot of ulceration before noticed is smaller; sulphate of copper to be again applied.

3rd. The spot of ulceration on the other testicle is gone,

and the whole extent of the line of incision abounds with healthy granulations; very little discharge; ligature still firm; he eats, drinks, and sleeps well.

7th. Granulations have almost filled up the wound, but the ligatures remain; the other testicle is smaller and free from pain.

11th. The ligature came away to-day; the wound is healing fast.

18th. Only a space about the size of a crown-piece now remains unhealed; the right testis is about its normal size, and is apparently free from disease; his colour has returned, and his health is excellent.

23rd. Nearly the whole surface is now cicatrized; his health is good, and his virility is unimpaired.

30th. Quite well; discharged cured.

Case II.—George Dodd, aged 30, married, railway policeman, was admitted into the Queen's Hospital, under Mr. West, September 29, 1858.

Previous History.—He states that, during his youth, he contracted gonorrhœa two or three times, and that, in the year 1854, he had a sore on the glans penis, which he describes as having a hard, cartilaginous base: this sore remained unhealed for two months.

Eleven months after that time a snow-ball which was thrown at him struck his left testicle, and gave rise to great pain and swelling of that organ; leeches and rest subdued the inflammation, and the testicle got comparatively well; however, at times slight swelling would recur, and on one occasion the skin of the scrotum became adherent to the testicle. This state of things continued for two years and a half, when, after exposure to cold and wet, he got into a low, weak state, and began to suffer from sore throat and an eruption on the skin. Nitrate of silver was used to the throat, but without effecting a cure, and two months before admission, while the throat was almost at its worst, the skin, where it was adherent to the testicle, "broke into a sore," and almost immediately fungous granulations began to sprout rapidly through the opening.

Present State.—The scrotum covering the left testicle is ulcerated to the extent of a crown-piece, and through the opening protrudes a mass about the size of a hen's egg, having a florid granular surface, secreting much pus, and covered to the extent of a sixpence with a thick slough. The posterior part of the pharynx is greatly ulcerated, and covered in places with a dirty ash-coloured slough. He has much pain and difficulty

in swallowing, and his hearing is also considerably impaired on the left side, but there is no discharge from the ear. He is greatly emaciated, and has a very cadaverous appearance; has slight cough, attended with muco-purulent expectoration; he has a very suspicious coppery scaly eruption on various parts of the trunk, and an excavated circular sore, with hardened callous edges, on the right side of the neck. Ordered full diet. The following wash to be used frequently: solution of subacetate of lead, a drachm; sulphate of zinc, ten grains; water, eight ounces: dissolve. And to take three times daily an ounce of the following mixture: dilute nitric acid, a drachm and a half; camphorated tincture of opium, half an ounce; and decoction of bark to eight ounces.

October 6th. His strength has slightly improved, and the testicle looks rather more healthy, but his throat is still greatly ulcerated. Ordered to have a pint of porter and three ounces of port wine daily; to use hydrochloric acid gargle, and to have ten grains of Plummer's pill every night and morning.

13th. His throat is no better, although his general health is improved. Ordered to have strong hydrochloric acid applied; he is completely under the influence of mercury; the ulceration of the scrotum increases, and the fungous protrusion appears larger. Ordered to omit the pills, but to continue the mixture.

17th. Throat much better, but testicle in same state. To use powdered nitric oxide of mercury to the fungus.

21st. Patient's strength appears to increase, but he begs to be rid of the testis, which gives him great pain and irritation.

27th. No improvement in the condition of the testicle being apparent, Mr. West determined to remove it, and accordingly castration was performed in the usual manner, the cord being secured, *en masse*, with a strong whip-cord ligature, and the incised edges of the scrotum brought into apposition by three silver sutures, and retained by a pad of wet lint and letter T bandage. Very little blood was lost during the operation, and no vessels required ligature; wine was given in large quantities, as the man became very faint, and a dose of morphia was administered on his being taken back from the theatre to his bed. A bag of ice and salt was applied, with a view of preventing hemorrhage during the rest of the day, and it not only had the desired effect, but also appeared to check the pain in the spermatic cord.

Description of the Testis.—The testis was adherent to the integument in every direction, so that it had to be dissected out: the two layers of the tunica vaginalis were adherent, and on section the testis was found to be the seat of numerous de-

posits of fibrinous material, some of them as large as a marble, and others not larger than a pea; between them the tubuli seminiferi were compressed; some of the fibrinous patches were becoming disintegrated, and, under the microscope, the *debris* bore a strong resemblance to miliary tubercle; the deposit was very firm, closely attached to the proper structures of the testis, pale-yellow in colour, very dense and compact, apparently homogeneous in substance, and bearing no evidence of fibrillation. Around the lower part of the testis there was a recent deposit of fibrine, to the depth of a quarter of an inch, but this material was of an entirely different nature to that in the interior of the testis, and was obviously the result of chronic inflammation. The ulceration was perfectly superficial, and no sinuses extended into the interior of the testis. The weight of the organ, when removed, was 2 ounces, 4 drachms, and 36 grains.

28th. The pain in the cord is gone, but there is slight abdominal tenderness; his pulse is 120, and he is feverish and thirsty; no hemorrhage. To take two grains of calomel and one grain of opium, in a pill, every sixth hour; and every fourth hour an ounce of the following mixture in effervescence with half an ounce of fresh lemon-juice: sesquicarbonate of ammonia, a drachm and a half; syrup of orange-peel, half an ounce; water, seven ounces and a half: dissolve.

30th. Tenderness is gone from the belly; the sutures which had caused the slightest possible amount of irritation were removed, and straps and fresh dressing applied; the upper part of the wound was found to have united by the first intention, and there was copious healthy discharge from an opening in the lower part; he is free from fever, and seems very comfortable. Ordered to leave off the pills, and to have a mutton-chop.

November 1st. The wound was again dressed; it looked well; there was no bagging of matter, and no great amount of inflammation about it; he is free from pain and abdominal tenderness, and only complains when the ligature is moved: pulse 80; strength improves daily; throat quite well.

5th. Healthy purulent discharge; no inflammation, pain, or febrile disturbance; he is rather weaker than he was a few days ago, and has very little appetite; his urine is high-coloured, and he sometimes has slight difficulty in passing it. To take, three times daily, an ounce of the following mixture:— Bicarbonate of potash, a drachm and a half; aromatic spirit of ammonia, two drachms; compound infusion of gentian, eight ounces: mix.

11th. The ligature came away upon slight traction being made; the wound, from which there is an abundant discharge

of healthy pus, is healing fast; he feels stronger, and his appetite is improved. To take five grains of compound quina pill three times daily.

18th. Health improves, and appetite remains very good; wound nearly healed; very little discharge.

December 3rd. He left the hospital perfectly cured: the line of incision in the scrotum being firmly cicatrized, and all ulceration having left the throat.

He returned to the hospital as an out-patient on December 23rd, on account of a slight purulent discharge from the left nostril, which evidently proceeded from an excavated ulcer on the septum nasi; a slight copperish eruption, of a papular nature, had also appeared on different parts of the body. To take, three times daily, an ounce of the following mixture:—Hydriodate of potash, a drachm; infusion of quassia, eight ounces: dissolve. In the course of a few weeks the eruption went away, and the ulcers of the nose healed up.

On the 16th of April, 1859, he again applied at the hospital, as he was suffering from ulcerated sore throat, which he said he had felt more or less ever since he left off taking the medicine. The sore on the right side of the neck which he had when he first came under treatment had also broken out again, and was as large as a half-crown. He was ordered to use the ointment of the nitric oxide of mercury, and to take the iodide of potassium as before. In the course of a month he again recovered his health, and he has not since applied for medical relief.

I shall now glance briefly over the salient points of the cases which I have recorded, and endeavour to deduce from them some practical observations as to the pathology of this singular form of disease. And first, as to their nature, no one can, I believe, doubt that these are two genuine cases of syphilitic orchitis, ending in fungus of the testicle. The fact of seven years having elapsed in one case, and four in another, between the occurrence of the primary sore and the first manifestation of disease in the testicle may, perhaps, tend to throw some doubt on the real nature of the attack; but when it is remembered that many of the phenomena of constitutional syphilis had developed themselves at various times, as evidenced by sore throat, skin eruptions, and unhealthy ulcerations affecting different parts of the body, I think the doubt must be dispelled. The syphilitic cachexia had been latent in the system in each case, and only needed the occurrence of some slight injury to the testis to set up in it an amount of aggravated mischief, which ended in its irreparable disorganization.

That the testicle should take on this unhealthy action under circumstances of slight local irritation, is not more remarkable than that those bones which are subcutaneous, as the tibia and the frontal bone, and are thus from their situation most exposed to external influences, should be the most prone to caries and necrosis, in those whose constitution is impaired by the syphilitic virus. The syphilitic testicle, doubtless, begins as a form of chronic orchitis, but the impairment of the vital powers, which always accompanies the development of the secondary and tertiary forms of syphilis, tends to the production of deposits of a tubercular character, which, in the first place, destroy the virile powers of the patient by compression of the tubuli seminiferi, and then set up irritation in the tunica vaginalis and cause union between its layers, so that the scrotum becomes adherent to the testicle; and lastly, in consequence of the degeneration of the ill-formed and lowly organized fibrine, softening and ulceration at some points on its surface take place, the scrotal covering of the testis rapidly gives way, and the fungus protrudes through the ulcerated opening, and is prevented from returning, even if it became greatly diminished in size, by the firm attachment of the scrotum to its edges, and by the contractile efforts which the muscular fibres of the dartos constantly keep up.

The persistence of the syphilitic symptoms in the second case, even after the chief local cause of irritation had been removed, also affords strong confirmatory evidence of the true syphilitic nature of the disease in the testicle. The character of the deposit was singularly alike in these cases, and corresponded in every respect with the description which authors who have paid attention to this affection attribute to it, except as regards the existence of cysts around the tubercles, but these I was unable positively to define.

The history of the cases was strictly analogous. Their onset after the occurrence of slight injuries, which, no doubt, temporarily set up acute orchitis, the subsequent relapse into a condition of chronic orchitis, and their termination also in disorganization of the testis in consequence of the deterioration of the vital powers,—all tend to prove their identity as well-marked cases of syphilitic testicle.

The slight amount of good which the free exhibition of mercury produced appears to militate against the opinion which Mr. Curling sets forth in his excellent work on this subject, namely, that he has "no great confidence in any other treatment than the mercurial in effecting a permanent cure:" but, perhaps, the depressed state of the patients prevented its having the beneficial influence which it might otherwise have exerted.

The absence of the secreting powers of the testes, together with the rapid amelioration of the constitutional symptoms which ensued upon the removal of these organs, justified, in my opinion, the extreme operative measures which were had recourse to.

And now, in conclusion, let me say a few words respecting the only note-worthy point in the operation. The ligature of the cord, *en masse*, though opposed by many surgeons, and even characterized by some as "a barbarous proceeding," was adopted, because it probably causes but little, if any, more severe after-pain, than when the vessels are tied separately, and because it has the great advantage of preventing the risk of retraction of the cord; and, even if hemorrhage does result, it is always small in quantity, and is easily arrested by the tourniquet, as in the first case, and there is no necessity of opening up the wound towards the inguinal ring to secure the bleeding vessel, and subjecting the patient to the fatal result which might ensue were the peritoneal cavity to be opened, as in the case which Professor Fergusson of King's College, London, relates, where a surgeon, in following up the wounded vessel into the inguinal canal, wounded the peritoneum, and death occurred in three days from the inflammation which ensued.

I must add one word in favour of the use of silver sutures. They answered admirably in the second case, causing union of the greater part of the line of incision by the first intention: thus fully warranting the praise which is now being accorded to them by all those surgeons who are having recourse to them in the place of silken or hempen sutures.

(*To be continued.*)

Art. XVII.—*Practical Observations on the Treatment of Aneurism by Compression.* By Samuel A. Cusack, M. B. Lond., F. R. C. S., M. R. I. A., Surgeon to, and Lecturer on Physiology at, Steevens' Hospital.

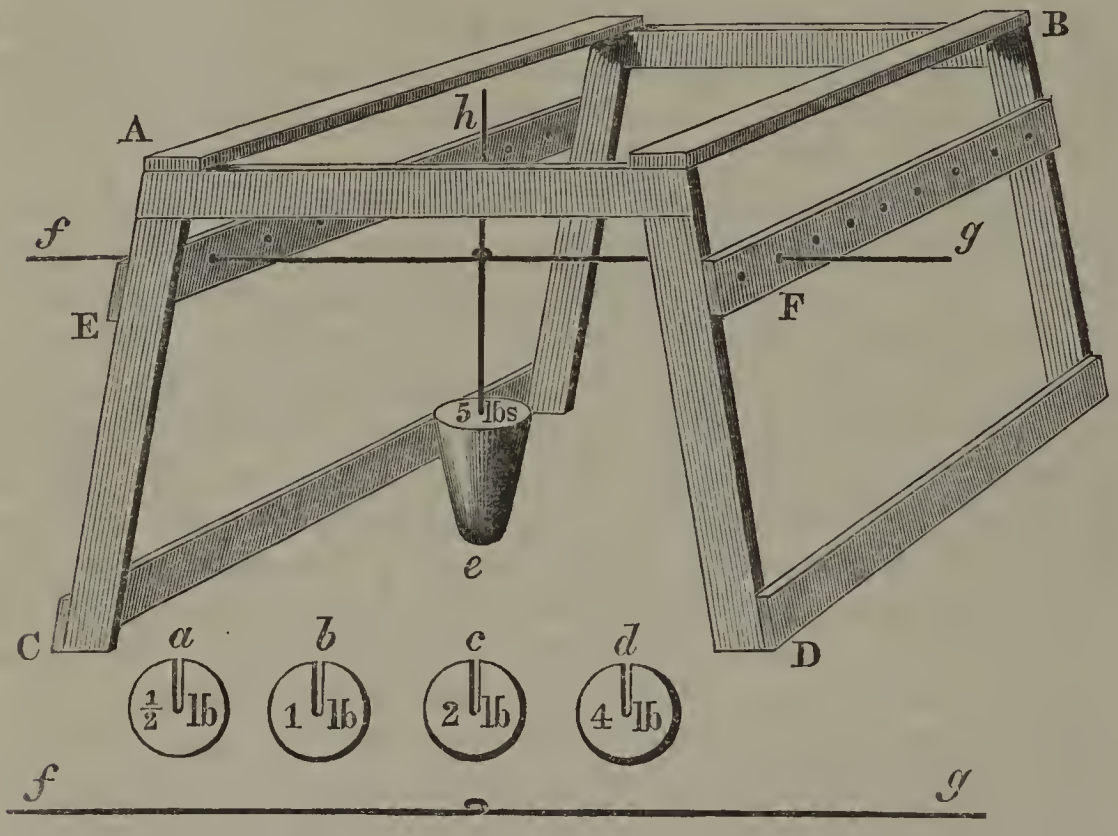
Some sixteen or seventeen years having elapsed since the treatment of aneurism by compression was fairly put upon its trial; and a large number of successful and unsuccessful cases having been published, the time has, I think, now arrived when an attempt may be made, by careful investigation of the causes respectively of success and failure, to arrive at some more definite rules than have yet been laid down for our guidance in carrying out this mode of treatment. That anything like a uniform system has not yet been adopted may be inferred

from the fact that a very different amount of success has attended the practice of different surgeons, and of this country as compared with England. I am further induced to take up this subject from the fact that careful attention to some cases which I have myself treated, and others which I had the great advantage of almost constantly observing during the period that I was resident surgeon in Steevens' Hospital, has led me to think that some modification in the mode of procedure first carried out in this country, as described in the late Dr. Bellingham's work on the subject, might be adopted, with reference to the kind of pressure made use of, as well as to the mode in which it is to be applied. I propose, then, in this paper to treat, first, of some of the causes of failure, in so many cases, of the compression treatment, more particularly in England; second, of the absolute amount of pressure which may be safely employed, and the kind of instrument which I have found most efficacious in applying it; and, thirdly, of the alterations in the duration and amount of pressure which are required in different cases, or stages of treatment.

First then, as regards the causes of so many failures, I think some of them have been owing to the fact that, in the instruments commonly made use of, no means exist for ascertaining the exact amount of pressure in force at any time, excepting the sensations of the patient, and the effect produced upon the artery or tumour: these, though the only guides which have hitherto been available in practice, are, I think, scarcely satisfactory, and, as a result, it has happened in many cases that, on the one hand, ulceration of the seat of pressure, or even gangrene of the limb, has taken place from over-pressure; and, on the other hand, and in many more cases probably, the endurance of both surgeon and patient has been exhausted by insufficient pressure, extending the cure over too long a period. Another cause of failure may have been that, in regulating the amount and continuance of the pressure, due regard has not been paid to the stage or condition of the aneurism under treatment: this, however, is a point to which I shall call more particular attention presently, when speaking of the modification in the mode of applying pressure which I have myself found to be most successful. Sufficient attention has not always been paid to the state of the patient's health and spirits, while, as a consequence, the blood's power of depositing fibrine is often impaired by the want of sleep and the irritable state of the nervous system, which may be occasioned by too long continued and unremitting pressure.

Secondly, it is a very important desideratum to know the exact amount of pressure which will arrest the flow of blood

through the femoral artery as it crosses the pubes: this may be readily ascertained by placing leaden weights, of different sizes, over the artery, until the pressure which obstructs the flow of blood is ascertained. By trying this experiment on a number of patients in the hospital of different weight and habit, I find that seven pounds and a half may be assumed as the average; in the great majority of cases this was the exact amount required; and in the few cases which differed from this amount, owing to variations in the strength of the arterial pulse, or in the amount of sub-cutaneous fat, six and eight and a half pounds were the extremes of variation. Dr. Bellingham states that he found the amount of pressure to vary from four or five to eight or nine pounds; the contrivance which he made use of, however, was uncertain, as a good deal of



the weight was lost upon the frame, or "hopper," in which it was supported. The wood-cut[a] represents the contrivance which I made use of in performing these experiments. Finding that it could be so easily applied, and that it was so certain in its action,—in fact, so near an imitation to manual pressure, which undoubtedly would be the best if it could be applied in practice,—I tried it in the next case of aneurism which presented

[a] A, B, cradle of light wood; E, F, light slips of wood, having gimlet-holes every two inches; *g*, *f*, strong piece of iron wire bent to a ring in the centre,—the same is shown below in profile; *a*, *b*, *c*, *d*, *e*, are leaden weights of different size; *e*, the largest one, is conical, and has a stiff iron wire, *h*, about twelve inches long, projecting from it.

itself, and with such satisfactory results that I should not now think of using any other instrument. The first case in which I tried it was cured by its use alone in twenty-six and a half hours[a]. Lately I attended, with Mr. Wilmot, a gentleman, in Upper Gardiner-street, for popliteal aneurism: he was a very fat man, and exceedingly intolerant of restraint; and, though every variety of instrument was tried, this was the only one which he could be induced to bear for any length of time, and without it, I think the cure, which took place in nine days, of eight hours a day pressure, could not have been effected.

The cradle may be about twenty inches wide at the bottom, C, D, where it rests on the mattress; and eighteen inches at the top where the bed-clothes are supported; the length should be enough to extend from below the knee to above the hip, about thirty inches. The wire, *g*, *f*, can be pushed through any of the holes in the slips, E and F, so as to bring the ring to the right position over the artery. To apply the instrument, the patient should be placed fairly on his back, on a moderately soft mattress; the cradle should next be placed over his body, and the wire, *g*, *f*, adjusted so that when the weight, *e*, rests on the femoral artery in the groin, the wire, *e*, *h*, shall be perpendicular; if the weight is placed fairly on the artery, it will be lifted up at each pulsation, and the smaller weights can be added until the requisite amount of pressure is produced. It might, at first sight, appear that this contrivance would be liable, as other plans for using the weight are, to slip from its position when any movement is made by the patient. This, however, is not the case, as, while the weight rests on the patient, and moves with him to a certain degree, the distance of the other point of support is so great that the wire is not much deflected from the perpendicular, and consequently the pressure is maintained in a proper direction, while the danger which often occurs from too tightly screwing down the instruments commonly in use is avoided. Not the least recommendation of this appliance is that it may be made at the cost of a few shillings by any person of ordinary ingenuity, and is thus available in the country, where the expensive and, in my opinion, unnecessary complicated instruments cannot be always procured.

Thirdly, much will depend on the duration and amount of pressure. As far as my own experience goes, it should decidedly be of an intermittent character, not exceeding six or eight out of the twenty-four hours: in this way, the patient, not being deprived of his accustomed amount of sleep, or made feverish

and irritable by constant confinement to one posture, the blood retains its natural properties, and, consequently, is better fitted to produce the fibrine necessary for the obliteration of the aneurism, while, for a similar reason, the tendency to ulceration, erysipelas, or gangrene, is not so great. This mode of procedure is different from that generally recommended, viz., relieving, as it were, one instrument by the application of another at a different point, so that, by keeping up unremitting pressure, the deposition of fibrine may not be interfered with or interrupted,—a plan which was, I think, founded on a physiological error, as it implies that if the treatment were allowed to intermit, the fibrine which had been deposited during a period of pressure might be removed during an interval of free circulation: fibrine once deposited must, I think, become more or less organized before it can be absorbed, and then, probably, only by the walls of the vessel with which it is in contact. It seems as probable, though it is a point difficult to verify, that fibrine may continue to be deposited from the blood on that already formed for a short time after pressure has been withdrawn, as it is well known that fibrine once deposited in contact with the blood has a tendency to add to itself fresh material from that fluid; further, some remarkable cases have been recorded, in which, pressure having been tried and given up, a spontaneous cure has taken place afterwards, which can only be accounted for by adopting this supposition.

It has been a common practice to apply pressure for hours at a time to one spot—the groin, for instance. In doing so, I think the well-known maxim has sometimes been forgotten, that long-continued pressure produces ulceration, while that of an intermittent character causes the opposite condition; to meet the requirements of this rule, I think it will be found, in most cases, that, in addition to the relief afforded by intermitting the treatment, there will be space enough at the groin to allow of the weight being moved up and down sufficiently to diversify the point to which it is applied; in this way, should the case be protracted, the integuments will be made harder and more tolerant of pressure. I have also found it a useful expedient to draw the integuments, if lax, as they often are, to one side or the other, as one might do to make a valvular incision. In this way a fresh surface of skin is presented to the pad, with great relief to the patient, and without disturbing the subjacent artery, the same portion of which remains under pressure. Should it be thought desirable to make pressure at any other situation than the groin, the weight cannot be very conveniently made use of, and a ring tourniquet or clamp must be employed. In those cases which have come under my own observation, pressure

elsewhere than at the groin had to be so severe that it could scarcely be tolerated by the patient, and even then it added little or nothing to the cure.

In treating aneurism by compression it is, I think, convenient to consider the disease as presenting two very different stages or conditions: one, that in which the tumour is more or less progressive, its walls elastic, and its contents fluid and easily evacuated; the other, that in which progress towards a cure, either spontaneous or the result of treatment, has taken place, the tumour increases little in size, or is, perhaps, stationary; its walls are lined with fibrine, and inelastic, and some collateral circulation has begun to be established through the superficial arteries of the limb.

In the summer of 1856 two cases were admitted, within a short period of each other, into Steevens' Hospital, under my care, the contrast of which was very evident, and which may serve to illustrate the point to which I now allude. The first, George Wilson, was admitted into the Primate's ward, May 7. 1856, having a femoral aneurism of six weeks' standing. The tumour, about eight inches in diameter, was a little above the middle of the left femoral artery; it pulsated visibly, and a loud *bruit* was heard when the stethoscope was applied; it could be quite emptied by direct pressure, and nearly so by compression upon the artery at the brim of the pelvis. Pressure was commenced on the 11th of May with a seven-pound weight, supported by the hands of the patient over a tourniquet pad in the groin, and continued, with a few hours' intermission, until the following evening, when, owing to some erythema and tenderness of the seat of pressure, it was discontinued. Finding that continuous pressure did not answer, I applied intermitting pressure, at the rate of six hours out of the twenty-four, from the 14th to the 25th of May, by which time the aneurism had become consolidated.

The second case, Patrick Mara, was admitted into Madam Steevens' ward, September 2, 1856: he had a popliteal aneurism of twelve months' standing. The aneurism presented the appearance of a large ovoid tumour in the left ham, which quite filled the popliteal space; on the outer side it was hard and firm, and void of pulsation and *bruit;* on the inner side it was softer, and had both pulsation and *bruit.* Pressure was commenced at 2 o'clock P. M. on September 5th, with a leaden weight, and afterwards with Carte's and other instruments, and continued with some intermission until the afternoon of the 6th, when a complete cure had been effected[a].

[a] A full report of these cases, from which this abstract is taken, was published in the Dublin Medical Press for November 19, 1856.

At the time that I treated these cases I was not aware of the full value of the intermittent form of pressure; were such cases to present themselves for treatment now, I should not think of interfering in any way with the patient's usual period of repose. In both of these the weight was at first used, but had to be discontinued when the patient became tired of keeping it in position with his hands, as I had not at that time contrived the appliance described in this paper; and, though I had the benefit of Dr. Bellingham's assistance, the leather case or "hopper" in which he attempted to apply the weight was not found to answer the purpose. The first of these cases was one which was active in its progress, and required a good deal of preliminary pressure before the collateral circulation was established, prefatory to the consolidation of the tumour; the second was one in which the first stage had passed, and a spontaneous attempt at cure taken place before the patient's admission, and, as a consequence, a speedy cure was the result. Many failures have, I think, taken place from not regulating the pressure according to which of these two conditions may be present.

To the first stage only moderate pressure, in fact such as was recommended by Mr. Todd as a preliminary to ligature, is applicable: to quote his words:—"The cases of popliteal aneurism are related chiefly with a view of recommending a more general adoption than is at present practised, of a preparatory course previously to operation. I can scarcely doubt but that in many cases of aneurism in which operations have failed, from mortification of the limbs succeeding, the patient might have been saved by a delay sufficient to allow some progress to be made in establishing the collateral circulation; and I feel confident that this desirable object may be promoted in most instances of recent disease, situated at a sufficient distance from the trunk, by compressing the principal artery of the limb for a few hours every day, for a period which must vary according to the circumstances of the case"[a].

In the second stage or condition of the aneurism, instead of the ligature, to which Mr. Todd considered the last-mentioned line of treatment prefatory, a weight of about eight and a half pounds should be used, so as entirely to stop any circulation through the main vessel; the blood which now reaches the tumour by collateral channels being sufficient for the deposition of fibrine, or the formation of coagulum; while the pressure, which can be accurately estimated if a weight is used, if not left on longer than an hour at a time, cannot cause gan-

[a] Dublin Hospital Reports, vol. iii.

grene or any other unfavourable complications. As the result of my own experience, it has generally occurred that, during one of these periods of complete arrest of the circulation, a perfect cure will have been effected. Indeed, I have not the slightest doubt but that many cases of unsuccessful pressure have been consigned to the ligature, which an hour's complete arrest of circulation, through the main artery, in the safe manner which I have described, would have effectually cured.

Many cases present themselves for the first time in what I have described as the second stage, in which the disease is stationary, and a spontaneous deposition of fibrine, with, perhaps, enlargement of collateral vessels, has taken place. Here the preliminary treatment may be very brief; strong intermittent pressure may be commenced almost at the outset, and a rapid cure may be anticipated: such was one of the cases already alluded to, and another which I published in the fifth volume of the Dublin Hospital Gazette, in which the cure was effected by twenty-six and a half hours' pressure. On the other hand, some cases present themselves which are increasing so rapidly, that pressure, even if continuously applied, can scarcely check their progress. These cases, which, fortunately, are rare, would not admit of the kind of treatment which I have recommended, and it is a difficult question to decide whether unremitting pressure, with its attendant dangers and inconveniences, should be tried in them, or whether resort should not be had at once to the ligature. I confess I lean to the opinion, that if moderate pressure, intermittingly applied, assisted by the usual precautions as to diet, &c., does not check the development, and diminish the pain of a rapidly growing aneurism, the last-named procedure should be at once adopted.

In a recent Number of the Medical Times and Gazette, a case was published which so strongly illustrates the necessity of paying attention to the points which I have here alluded to, that I take the liberty of giving a brief abstract of it. It occurred under the care of Mr. Ward, in the London Hospital, and was one of those cases which I have described as being in the first or active stage:—"There was a well-marked *bruit de soufflet*, and the swelling shrank considerably when pressure was made on the femoral artery." After a week's confinement to bed, and attention to the other necessary preliminary measures, "compression treatment was commenced. . . . A meat weight and a pad to the groin, and Biggs' aneurism compressor, were alternately had recourse to, instruments which had proved successful on two previous occasions. . . . This treatment was kept up for four days, never, however, at any time sufficient to stop the pulsation in the aneurism. . . . On the fourth day the skin over

the artery at the lower fourth of Scarpa's triangle, corresponding in extent to the area of the pad of the compressing instrument, looked livid and dark, and was of a low temperature. . . . The compression treatment was laid aside. . . . Ultimately, an eschar involving the skin and soft tissues down to the sheath of the artery separated"[a]. The first case which I mentioned as having occurred in my own practice, that of George Wilson, was very similar to this one: had it not been that he was a young and healthy man, and his heart's action strong, I think it probable that the erythema and tenderness, instead of terminating in resolution, might have, as in this instance, ended in sloughing. Had the treatment which I now advocated been carried out in Mr. Ward's case, I think a different result might have been anticipated; fortunately for the patient, he was in skilful hands; ligatures were placed on the artery on the fourteenth day after the separation of the slough, above and below the wound, and in a few weeks he left the hospital cured.

Many such cases as this have occurred in England and this country, and have thrown discredit upon the compression mode of treatment, some of them, unfortunately, not having terminated so favourably as this one did.

As a corollary to these observations, I should be disposed to adopt the following rules in treating a case of femoral or popliteal aneurism:—

1. The patient should be subjected to the usual diminution of diet, and sedative treatment; abstinence from drink being particularly enjoined, as recommended by Dr. Bellingham.

2. The patient having been put on a moderately soft mattress, and a pillow placed under the knee, a weight of about five and a half pounds should be applied every alternate hour, during the day, to the artery at the groin, and withdrawn at night. The lesser end of the leaden weight which I use is rounded off to the size of a hemisphere, of one inch in diameter; and the integuments are protected by one or more layers of chamois leather.

3. After the lapse of six or eight days, or sooner if the collateral circulation has been fairly established, the weight should be increased to eight and a half pounds, so as to imitate the ligature, and completely obstruct the main artery, care being taken that it is not left on more than an hour or an hour and a half at a time. In this way an immediate cure may sometimes be effected by the formation of a coagulum; or, if not, more slowly by the deposit of fibrine.

[a] For full particulars of this most interesting case, see Medical Times and Gazette for October 1, 1859.

PART II.

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11. *On Hallucinations.* By A. Brierre de Boismont, M. D. Translated from the French by Robert T. Hulme, F. L.S., M. R. C. S. Eng., and Lecturer on Comparative Anatomy at the Grosvenor-place School of Medicine. London: Henry Renshaw. 1859. 8vo, pp. 455.

12. *The American Journal of Insanity.* Edited by the Medical Officers of the New York State Lunatic Asylum. January, 1859. Utica, N. Y. State Lunatic Asylum.

13. *A Letter to the Right Honourable the Earl of Shaftesbury, &c., &c., on the Laws which regulate Private Lunatic Asylums, with a Comparative View of the Process "De Lunatico Inquirendo" in England, and the Law of "Interdiction" in France.* By Edward J. Seymour, M. D., F. R. S., late Senior Physician to St. George's Hospital. London: Longman and Co. 1859. 8vo, pp. 59.

14. *Tables for the Diagnosis of Diseases of the Brain.* By J. Russell Reynolds, M. D. Lond., Fellow of University College, Assistant Physician to the Westminster Hospital. London: Churchill. 1857. 4to.

15. *Report of the Londonderry District Asylum for the Lunatic Poor for Londonderry and Donegal, for the Year ending March* 31, 1859. By WILLIAM ROGAN, M. B., Resident Physician. Pamphlet, pp. 15.

16. *Fourth Annual Report of the Mullingar Asylum for the Insane Poor, to May* 31, 1859. By HENRY BERKELEY, M.D., Resident Physician. Pamphlet, pp. 32.

17. *Twenty-ninth Annual Report of the Belfast District Hospital far the Insane, to March* 31, 1859. By ROBERT STEWART, M. D., Physician-Superintendent. Pamphlet, pp. 35.

18. *Eighth Annual Report of the Wilts County Asylum, Devizes, for the Year* 1858. By JOHN THURNAM, M. D., Physician-Superintendent. Pamphlet, pp. 43.

19. *Fourth and Fifth Annual Reports of the County and City of Worcester Pauper Lunatic Asylum.* By JAMES SHERLOCK, M. D., Medical-Superintendent. Pamphlets, pp. 76 each.

20. *Statistical Report of Cases of Insanity treated in Abington Abbey, Northampton, from January* 1, 1854, *to December* 31, 1858. By THOMAS PRICHARD, M. D., Fellow of the Royal College of Physicians of Edinburgh, and formerly Medical Superintendent of the Glasgow Asylum for Lunatics. Pamphlet, pp. 26.

21. *Annual Report of the Royal Edinburgh Asylum for the Insane, for the Year* 1858. By DAVID SKAE, M. D., Resident Physician. Pamphlet, pp. 44.

22. *Medical Report of the Royal Lunatic Asylum of Aberdeen, for the Year ending December* 31, 1858. By ROBERT JAMIESON, M.D., Physician-Superintendent. Pamphlet, pp. 23.

23. *Thirty-second Annual Report of the Directors of James Murray's Royal Asylum for Lunatics, near Perth, June,* 1859. Pamphlet, pp. 58.

24. *Eighteenth Annual Report of the Crichton Royal Institution for Lunatics, Dumfries, November* 11, 1857. By W. A. F. BROWNE, M. D., Physician-Superintendent. Pamphlet, pp. 44.

25. *Report of the Pennsylvania Hospital for the Insane, for the Year* 1858. By THOMAS S. KIRKBRIDE, M. D., Physician-Superintendent. Pamphlet, pp. 62.

1. WE commence our Tenth Annual Review "On Insanity and Hospitals for the Insane," on the present occasion, with the lately issued Blue Book, entitled the "Ninth Report on the

District, Criminal, and Private Lunatic Asylums in Ireland," as addressed to His Excellency the Earl of Carlisle, Lord Lieutenant of Ireland, by the Government Inspectors, Dr. Nugent and Dr. Hatchell, and presented to both Houses of Parliament by command of Her Majesty. A public document, such as this, is full of the deepest moment, relating, as it does, to the interests of, unhappily, an increasingly large portion of the human family, the subjects of the direst affliction that can be imagined, and consequently demanding the continued and warmest sympathies of all. It is a matter which cannot but give the largest amount of satisfaction to the humanely disposed to have such self-evident proof as that afforded by an authentic official Report, as the one now under consideration, of the most constant and watchful care being exercised on behalf of the insane, rich and poor, in these countries; and greatly does it redound to the honour of the national character that, be our shortcomings and failings what they may in other respects, it cannot be laid to our charge that we are culpably unmindful of our insane, or holding back in endeavouring to accomplish the largest amount of good on their special account.

The Report of the Inspectors fully bears out this statement of ours. Let any impartial person examine its contents, and we feel assured he will not have any difficulty in arriving at the same conclusion. Into the minutest matter of detail it enters with the greatest care, giving the fullest information on every particular of the least importance that could be desired, whether professionally, statistically, legislatively, or fiscally.

The Inspectors show that there is still great necessity for increased accommodation being provided for the insane poor in this country, a necessity found equally to exist both in England and Scotland. That a sufficient number of well-appointed and well-found curative establishments should be provided, there cannot be a doubt; and we earnestly trust and hope that the great wants experienced in this respect will be grappled with and provided for with every convenient despatch. We are quite of the same mind with the Inspectors in thinking that the time has fully arrived when each county in Ireland should provide itself with an hospital for the insane. It is admitted by the best authorities, and earnestly pressed too, that institutions for the treatment of mental disease should not contain more than a certain number, as, beyond that certain number, the chances of the patients of all classes receiving that attention which they absolutely need from the responsible head of the establishment must necessarily be diminished, and

thus a permanent evil be inflicted on the community at large, by the probabilities of a patient recovering ability to resume the duties of the extern world being in anywise lessened. This is a view of the case of the greatest moment, and should be kept in mind by those economizing parties who would multiply the cases in individual asylums, instead of multiplying the asylums themselves, and thus be acting with true economy, to say nothing of true humanity; for we cannot conceive anything more melancholy, or more calculated to cause permanent depression with the sane as well as the insane occupants of an asylum, than its hundreds upon hundreds of wretchedly afflicted inmates, as is the case in the sister kingdom, which we are grieved to see is an increasingly persevered-in evil there by the responsible authorities, who would appear deaf to all entreaties to stay their hands in this destructive policy; and all this is done on the ground of economy! Alas, that this should be the case in any portion of this Christian land! Our voice, however feeble, has been again and again raised against this miserable and cruel system, and still shall we persevere in denouncing it until, happily, a better spirit shall rule those who at present have this power of evil in their hands, and who will listen to no reason on the subject.

With reference to the maintenance of public asylums in Ireland, the Inspectors show plainly that the present system presses very hardly on the farmer in possession, upon whom falls solely the support of those necessarily costly institutions, the owner in fee not being liable, as is the case in the poor-law rateage, in which latter the landlord and the tenant pay in equal proportions. The Inspectors, accordingly, suggest on this head—a suggestion which we consider well worthy of the best consideration—the levying of a rate-in-aid as a fair and more equitable plan of obtaining the necessary funds for the future for the due maintenance of the several district asylums in Ireland. On this head the Inspectors observe:—

"Regarding lunacy, however, not alone as worthy of local consideration, but comprehensively as one of general importance, a question may arise as to whether the sums necessary for the maintenance of asylums might not be levied through existing machinery on the established and legal principle of a general rate-in-aid, not to exceed 3*d.* in the pound first demand on the poor law levy, and payable to a central board for the due organization of lunatic establishments in this country.

"The annual poor-law valuation, which, for some years, with the advancing prosperity of the country, has also been proportionally on the increase, amounts at present to over twelve millions, with the

still further likelihood of greater improvement. Three pence in the pound would constitute a clear income of £150,000 a year, of which £30,000 would be ample to liquidate in sixteen years all debts to the Treasury, prospectively and retrospectively. At the present moment Irish asylums owe £280,000. £30,000 raised annually for sixteen years would be £480,000; thus we should have a surplus fund for building, repairs, and the purchase of land, of £200,000, leaving ultimately, at the rate of $2\frac{1}{2}d.$ in the pound, £125,000 for annual maintenance. Neither would this be a newly created expense, as above £12,000 a year is spent for the support of the insane in poor-houses, independent of a further sum for dangerous lunatics in gaol, say between both a minimum of £16,000 a year."

In immediate connexion with the support and the continued success of our public hospitals for the insane, we are more and more firmly persuaded that, as regards the superintendent physicians at least, their salaries and superannuations should be defrayed out of the national funds of the country. These officers, we consider, should be appointed on the sole responsibility of the executive Government, as at present; but, inasmuch as their salaries have to be paid by the rate-payers, great and, it must be admitted, reasonable exception has been taken to the Executive exercising a patronage which costs them nothing. On every account, therefore, we would desire to see this change provided for in any new legislation that may be proposed for the regulation of our Irish asylums. All the other appointments might properly be left in the hands of the local authorities.

The inadequate remuneration of the servants in the district asylums is thus most pointedly alluded to in the Report:—

"Furthermore, the rate of wages is not equal, being comparatively much lower in some institutions than it ought to be. In this respect we are glad to observe that Boards of Governors are sensible of the propriety of paying more liberally, to secure efficient services; a point which, taking into account the duties and responsibility of attendants on the insane, we have always urged on the consideration of the local authorities."

And, as regards the Physicians-Superintendent themselves, the Inspectors forcibly observe:—

"Considering the responsibilities, the nature of their duties, and the never-ending anxieties imposed on the superintendents of institutions crowded with their insane fellow-beings, almost their sole companions, we feel that the Act, in its most liberal construction, should be extended to these officers; and that while on the one hand

as educated professional men, debarred of practice, their scale of salaries should be increased; on the other, the right to full superannuations should be granted them after a reasonable length of service."

This is putting the case of those anxiously-placed officers in its proper light before the authorities, and for which the Inspectors deserve great credit—men whose duties are of the most arduous, trying, and responsible nature, besides never-ending, and which, to perform efficiently, require an amount of qualifications, moral, mental, and physical, not easily met with in the one individual; but to secure the largest amount of which, a liberal and handsome salary, with all other adjuncts, should be the rule, and not the exception, and, above all, the *right* to a superannuation pension at the term, we would say, of twenty years' faithful service, which would be equivalent to at least forty years in any other public department, as the wear and tear in the case of Medical Superintendents of asylums are well known to be of the severest description.

It is, however, very gratifying to find that the Inspectors afford the strongest proof of the large claims the Resident Physicians have for consideration and encouragement of the most liberal kind being meted out to them in their confessedly arduous vocation; the present Report showing the great ability and unremitting personal supervision exercised by the Resident Physicians, who are "primarily responsible for the general well-being" of their respective establishments, as properly stated by the Inspectors.

The annexed extract, in reference to the results of treatment for the last two years, the period embraced in the Report, bears us out in our estimate of the successful labours of the Resident-Physician:—

"On contrasting statistical returns from other countries with those of our own, whether recoveries be calculated by the percentage on admissions only, or on the daily average number under treatment, or on the total number in hospital during the year, as indicative of the general system of treatment adopted in Irish asylums, we can safely refer to results, the successful character of which is calculated to place these institutions in a foremost position.

"On admissions, the absolute cures in Irish asylums during the last two years reach 48·71 per cent., as against 36·99 in Scotland, 38·49 in England. Independent of the recoveries in our asylums, there were also discharged improved 13·26 per cent. of the admissions, representing under both heads 62 per cent. Of the daily

average, 16 per cent. recovered, and 4·20 improved; and, in like manner on the total under treatment, 12·15 and 3·30 respectively.

"In an official report presented to the Prefect of the Seine, 1856, a comparative tabular statement is given of the cures in French and English asylums, the recoveries in the former being represented on the *average* under treatment, as 13·27—in the latter at 9·90 per cent. Had the results obtained in Irish institutions been embraced by the writer with those of the sister country, they would have modified his calculations both as to recoveries and deaths, the average cures here being as appears nearly 3 per cent., or in the abstract, relatively speaking, almost a fifth over those in France.

"According to the Tables of mortality in England—none exist in this kingdom—it would seem that the deaths in the general population amount to about 9 annually in every 400. Within the last two years 7·42 per cent., being, however, one less than in the preceding similar period, died in district asylums. This large mortality among lunatics should not be a matter of surprise, if we reflect that so frequently combined with mental disease—itself tending to curtail existence, more especially in the acute or violent stages, are many other serious maladies, epilepsy, affections of the head, but, above all, pulmonary consumption; the latter constituting the immediate cause of death in more than one-fourth of the entire number of cases, while in general infirmaries, according to the Census Report, it does not exceed 10 per cent. Again, on the score of a smaller mortality, Irish asylums hold a decided advantage, being 7·42 as regards 8·37 in the Scotch, and 10·30 per cent. in English asylums."

We entirely accord with the spirit and common sense of the Inspectors' views, as follows, in respect of the "education of patients:"—

"Much has been said and written about the encouragement of literary pursuits in asylums: printing presses and the issue of periodicals are not unknown in some. We cannot speak very buoyantly of success,—the patients in Irish institutions, as a body, taking but little interest in books. Those advanced in years are almost all uneducated; a fair proportion of the younger are more or less instructed, but not sufficiently so as to derive amusement from general reading. Prints, pictures, and such like ornaments in the corridors and day-rooms, thus breaking the monotony of bare and whitewashed walls, are more to the taste of the inmates; they are cheaply obtained, as a novelty are beneficial to the insane, and from their humanizing influence agreeable to them, as well as to the casual visitor."

The tables contained in this Report are, as usual, most elaborately prepared and very numerous, affording thus succinctly an amount of information almost incredible, and all, too, of a most interesting kind in every point of view. It would be im-

possible for us, in our very limited space, to attempt giving even a list of them, to say nothing of a summary of their valuable contents. We can only afford room to state that from a glance at them we collect the following facts, viz.:—The daily average number of patients in the existing sixteen District Asylums in Ireland, for the year ended 31st March, 1859, was 4060½, the total outlay in the maintenance of which was £81,080 16*s.* 2½*d.*, being an average annual cost of each patient per annum of £19 19*s.* 4½*d.*; the highest individual cost in any of the Asylums, viz., at the Richmond, with 652 patients, being £25 19*s.* 7*d.*, and the lowest, at Cork, with 471 patients, viz., £13 7*s.* 0¾*d.*, which appears a remarkable difference. In salaries of officers, the highest is that of the Richmond, viz., £1488 10*s.* 1*d.*; the lowest, at Armagh (140 patients), viz., £415. The total expenditure in tobacco and snuff in all the Asylums for 1859 was £475 18*s.* Three of the asylums, viz., Belfast, Carlow, and Kilkenny, are not chargeable with the use of the "noisome weed" in any form, and we only regret that so few are in this enviable category; but let us hope better things of the larger number for the future. Teetotalism nearly would appear to be the practice in the Irish asylums, inasmuch as we find that all that was expended during the year 1859, in "wine, beer, and whiskey," was only £308 9*s.* 6½*d.*, the smallest expenditure under this head being at Mullingar (222 patients), viz., £2 3*s.* 4*d.*, and the largest, the Richmond, viz., £102 4*s.* At two, viz., Belfast and Sligo, there was no expenditure incurred in this respect for that year. In "medicine and medical diet," the difference of expenditure was most remarkable, the same varying from £5 1*s.* 1*d.*, at Omagh, with 244 patients, to £855 9*s.*, at the Richmond (652 patients), a disproportion which we are quite at a loss to account for. As regards the numbers sleeping in dormitories, Armagh has the largest associated together, viz., 25; Clonmel, 22; Carlow, 21; Derry, 18; Maryborough, 17; Limerick, 16; Waterford, 16; and the others varying between 14 and 2. We have often before expressed our dissent to more than six sleeping together in the same room, and here we regret to find we are at issue with the Inspectors, who advocate the injurious system of large dormitories, so large as to hold one hundred each, which we consider highly objectionable on moral, medical, and hygienic grounds, being fully satisfied that even a tenth of that number is too much, and very obnoxious to the patients themselves, who feel it a great hardship to be thus herded together *en masse* during the night, and subjected to the innumerable discomforts of a large, if not crowded, dormitory, whose atmosphere, long be-

fore morning approaches, must inevitably be surcharged with all that is offensive to the olfactories, and hurtful to the respiratory organs, let the ventilation be perfect as it may.

The Inspectors, amongst their other tables of the deepest interest, give us one in connexion with the total number of lunatic, idiotic, and epileptic cases in the several workhouses in Ireland on the 2nd day of April, 1859, which amounted to 2047, viz., lunatics, 500 (139 males, 361 females); idiots, 825 (372 males, 453 females); epileptics, 721 (211 males, 510 females). Of the 4090 patients remaining under treatment in the district hospitals for the insane on the 31st March, 1859, the number of the probably curable was only 1275 (653 males, 622 females), and the chronic or supposed incurable, 2815 (1434 males, 1381 females). As to social condition, the married were 943 (446 males, 497 females); unmarried, 2704 (1496 males, 1208 females); widowed, 320 (70 males, 250 females); unknown, 123 (75 males, 48 females); total, 4090 (2087 males, 2003 females). As to education, 1158 (487 males, 671 females) could neither read nor write. The daily average number employed was 2307 (1065 males, 1242 females).

The Inspectors, of course, continue strongly to advocate the compulsory appointment of paid chaplains in all the asylums, and we continue to differ from them *toto cœlo*, in respect of this now long-vexed question, one which we had hoped had been long since abandoned by them. They give a quotation, in favour of their view, from a local Report, which we consider quite out of place, and giving no force to the point at issue; but what has greatly surprised us, in connexion with this subject, is, that a paragraph, so extremely arbitrary in spirit and letter as the following, should have appeared in this otherwise enlightened and progressive Report:—

"We trust, as by a decision in the Court of Queen's Bench in Ireland, it was ruled that the Lord Lieutenant in Council had not authority to appoint regular chaplains to hospitals for the insane, that in any future Act full powers may be conferred on His Excellency, on this and every other point where the well-being of institutions for the insane is in question; and if doubts should arise on the construction of a clause, it should rest with the Lord Lieutenant in Council, on the opinion of the law officers of the Crown, to decide the meaning."

It must strike all with astonishment, that no provision of any kind has been made in this country for the medical and moral treatment and due comfort of those in the position of privates in the army and of the constabulary force, with others

in the immediate service of the Crown, when the subjects of insanity. This is very discreditable to our rulers, and should no longer be permitted to remain a blot on the common humanity of the nation. The Inspectors thus forcibly, aud much to their credit, call the attention of the Executive to so serious an evil:—

"We would now respectfully direct your Excellency's attention to a subject of some importance in connexion with the lunatic requirements of this country. We refer to an asylum accommodation for persons who, while employed in the military or civil services of the Crown, become insane, and who at present may be regarded in this respect as altogether unprovided for. Soldiers, marines, and the constabulary force in Ireland, are so habitually changing place that they cannot be considered as belonging to any particular county or city, and thus possessing local claims on its charities; whilst their continued absence from home deprives them of social rights which they otherwise would enjoy. We find that unfortunate lunatics from the above-named classes are exposed to much privations, and that considerable obstacles have to be surmounted in procuring them a shelter in district asylums, not, however, from any want of sympathy on the part of boards of governors, but from the difficulty of obtaining admission into crowded institutions, while residents and ratepayers themselves are awaiting vacancies.

"So far as lies in our power, we facilitate into asylums on every occasion the reception of members belonging to the service; still we cannot but feel that they ought to be placed beyond the necessity of eleemosynary applications, and that some arrangement is requisite to secure to men whose lives are devoted to their country in all the vicissitudes of climate, a certain place of refuge when visited by one of the saddest afflictions of Providence upon mankind."

And again, to another most important but sadly neglected and miserably circumstanced portion of the community, when stricken down with mental disease, the Inspectors specially and feelingly allude in their present as well as their last Report. It is that class in which are embraced clerks, governesses, and others of respectable position and education, who have been accustomed to enjoy all the comforts of private life in their respective spheres whilst in mental health, but, deprived of this, their only resource is to be placed amongst their inferiors in the public asylums, and thus have their condition most grievously aggravated. We ourselves, in these Annual Reviews, have earnestly advocated that an intermediate asylum should be established for such, and with the Inspectors we ardently hope that this great social evil will be boldly met by those in authority, and its removal speedily accomplished.

The Central Asylum at Dundrum, under the judicious and humane superintendence of Dr. Corbet, continues to fulfil its important mission to the satisfaction of the Inspectors; several details in connexion with which, and of a very interesting nature, are given in the Report, but for which we have not space, and must, on the present occasion, content ourselves by giving the following brief summary of its state on the 31st of March, 1859:—Under treatment during the year, 141 (males, 96; females, 45). Discharged during the year, 7 (5 males, 2 females). Died, 4 (males, 2; females, 2). Remaining, 130 (males, 89; females, 41). Daily average number of patients, 130. Average cost of each patient per annum, £26 18*s.* 6¼*d.* Total outlay for the year, £3500 7*s.* 9½*d.*

The Private Asylums in Ireland, on the 31st December last, amounted to 16, including the licensed one at Lucan (which, in addition to its Government inmates, is licensed for private patients also). The number remaining under treatment during the year in the sixteen amounted to 463 (254 males, 209 females). The largest number was contained in St. Patrick's Hospital, viz., 148 (76 males, 72 females). The next at Hartfield House, viz., 41 (23 males, 18 females). The smallest number, at Lucan (exclusive of its Government patients, the number of whom is not given), 4 (2 males, 2 females). The total number of deaths was 32 (21 males, 11 females), the mortality in them being nearly in the same very small per-centage as in the district asylums.

Having now completed our notice of this Report of the Inspectors, we may, in conclusion, observe, that it does them and their very efficient staff the greatest credit for its comprehensiveness, excellent tabular arrangements, and general completeness; the contents, taken as a whole, being exceedingly able, together with being a Government document, second to none for importance as an official standard of invaluable reference on all that relates to insanity in this country.

2. The Thirteenth Report of the Commissioners in Lunacy in England contains the usual amount of information connected with insanity, and is compiled with much care. The entire number of all classes of the insane in England and Wales, under treatment on the 1st of January, 1859, amounted to 22,911 (10,827 males, 12,084 females).

This gross number contained 18,022 (8169 males, 9853 females) of the "pauper" class, and 4,889 (2,658 males, 2,231 females) of the "private" class of patients. The "pauper" portion was thus located, viz.:—In "County and Borough

Asylums," 15,615 (7,127 males, 8,488 females); in "Hospitals," 218 (109 males, 109 females); in "Metropolitan Licensed Houses," 1,264 (464 males, 800 females); in "Provincial Licensed Houses," 925 (469 males, 456 females). The number deemed curable of the above gross amount of 22,911 was but 2,773 (1,382 males, 1,391 females), thus leaving a residuum of 20,138 of the incurable or chronic class. The cases deemed curable in the County and Borough Asylums were 1,673, out of 15,842 (879 males, 794 females); in Hospitals, 339, out of 1,858; in Metropolitan Licensed Houses, 331, out of 2,551; and in Provincial Licensed Houses, 413, out of 2,523. The total number of recovered cases during the year 1858, was 3,079 (1,399 males, 1,680 females). The deaths were 2,306 (1,274 males, 1,032 females); of these, 12 were from suicide (5 males, 7 females), 4 of which occurred in Public Asylums, 3 in Hospitals (lunatic), 1 in Metropolitan Licensed Houses, and 4 in Provincial do.; and from accidents or violence, 17 (10 males, 7 females), viz., 8 in Public Asylums, 1 in Hospitals, 4 in Metropolitan Licensed Houses, and 4 in Provincial do.

The Report states, that since last year new asylums had been opened at Durham (312 patients), Cambridge (250), and Northumberland (number not given), but that still the accommodation for the "pauper" insane in public asylums was entirely inadequate to meet the demand for admission—a want which compelled the unfortunate insane "pauper" to be kept in the workhouse, or farmed out with strangers, or, if sent to a "licensed house," it was only to be placed at a distance from his relatives, and his maintenance thus made a heavy charge upon his parish—"a system," the Commissioners observe, "superseding the public asylum, and rendering necessary the existence of licensed houses for paupers."

In making additions to overgrown asylums, the Commissioners suggest the erection of detached buildings of a simple and inexpensive character instead of extending the original structure, which have been found preferable to long galleries, and have given great satisfaction to the patients themselves from their more home-like apartments and cheerful and comfortable appearance.

Special reference is made to the enlargements going on in the already huge and unwieldy establishments at Hanwell (1005 patients) and Colney Hatch (1285 patients), for the pauper insane of the county of Middlesex. In vain have the Commissioners raised their warning voice against those monster institutions being further increased in their already too enor-

mous proportions; and, as regards the additions to Colney Hatch, it appears, the Report states, that—

"They have a more detrimental effect upon the older portions of the building than had even been anticipated when the plans were originally submitted. The lofty new wing for female patients at the western extremity of the Asylum overshadows and renders gloomy the yards on either side of it; and, by some oversight, the roof of the new block on the south has been so constructed as entirely to obstruct all view of the country in that direction: whilst the new spur on the east still further encloses the airing courts, which were before open and cheerful, and indeed the best belonging to the Asylum."

Thus, then, have permanent causes of positive injury to the unfortunate inmates of this "mammoth" receptacle of insanity been perpetuated by its Board of Visiting Justices, which cannot be reprobated too strongly. But, highly reprehensible as these "detrimental" and blundering additions have been, much more so is their unreasonable and oppressive conduct in having only two medical officers (with the assistance of two dispensers) to attend to the entire medical and moral control and care of 1285 patients. Owing to a charge so overwhelming as this, the Commissioners truly and pointedly observe, that "it is manifest anything like individual treatment must be limited to a very small proportion of the cases." And again—"We fear that with the mass of patients the Superintendents must necessarily depend mainly upon the good conduct and trustworthiness of the attendants. Moreover, the chance of cure must be greatly reduced; such chance being still further diminished by the fact, that during the last six months there has been no medical assistant (dispenser ?) on the male side."

Is it not most unjust and cruel, that two professional men are to be so overworked, and expected to do an impossible amount of duty, even had each herculean strength of body and vigour of mind ? The mental strain and anxiety which must be constantly at work in the seriously responsible charge of nearly 1300 insane patients, day and night, under one roof, by but two medical men, must be intense to a degree, and this, too, at a most miserable rate of pecuniary remuneration ? Our only surprise is that educated gentlemen can be gotten to undertake any such monstrous task, as sure we are that the labouring man is in a more enviable position than the oppressed Medical Superintendents of Colney Hatch Asylum. However, having secured the services of competent parties, the Visitors should at least act with a little more conscience towards them, both as to payment and a proper staff of assistants.

On every account this should be done, especially in order to render common justice to the poor patients themselves, and give them a chance of having their disease mitigated, if not cured.

In our last Annual Review we reverted to the points now under consideration, in the full hope that before another year elapsed a changed state of things would have taken place; but, unhappily, no amelioration, nor any appearance of such, has resulted, which we cannot but consider as extremely discreditable to the parties who have it in their power to apply the proper remedy. The Commissioners, however, have not failed to expose again and again these shortcomings in the Middlesex mode of procedure towards both its Medical Superintendents and afflicted insane population; they have also called attention to a remarkable feature in the Hanwell Asylum, namely, that of the Visitors not allowing the medical officers to peruse the reports made by the Commissioners,—"written, in fact, for their (the medical officers') particular consideration," —which is about as arbitrary and stupid an exercise of power as could well be imagined.

The Reports of the Commissioners on the condition of the County and Borough Asylums, with a few exceptions, are generally satisfactory, and much credit is given to the several Medical Superintendents for the efficient state in which their respective institutions were found on inspection during the past year.

The York West Riding, Haverfordwest Asylum, and the Hull Borough Asylum, have been more or less severely commented upon for their shortcomings in several particulars, as enumerated in special reports on each, more especially the two former. The Licensed Houses in the metropolitan district are reported to have been "progressively improving in their condition and management." In the "provincial" class, Acomb House, one of this description, of unenviable notoriety, is specially and largely referred to in regard to the misconduct of Mr. Metcalfe, the former resident medical proprietor, who not only was deprived of his license as no longer fitted to be intrusted with the care of the insane, but also was criminally indicted at the assizes for his misdeeds, and a true bill found against him, which, however, to the present time remains over his head, he having left the country before he could be held to bail.

As respects a Military Asylum for soldiers when the subjects of insanity, the Commissioners have again to report that the military authorities were altogether indifferent to their

urgent and frequent appeals on this head,—the poor, demented soldier, who had lost his reason in the service of his country, being cruelly "farmed out" when thus mentally prostrated, and "made a source of profit to the proprietor of a private asylum." Neglect of this kind on the part of the responsible authorities is nothing short of a great and unpardonable crime, as well as national disgrace, and should not be winked at any longer, the honour of the country being called into question by its continued existence, and a dereliction of duty thus charged upon it. Is there not a single independent member of either House of Parliament to be found to bring this subject prominently before the Legislature?

The Asylum for Criminal Lunatics at Bagshot Heath, to accommodate 500, it is stated, is making considerable progress, and was anticipated to be in readiness in the course of the ensuing year.

We regret being unable further to extend our analysis of this excellent and practical Report of the English Commissioners; but we have sufficiently drawn upon its pages to show the value of its contents generally, and that, as in Ireland, so in England the interests of the insane continue to be closely and narrowly watched by all concerned, and "progress" to be the order of the day on behalf of those who are thus so unhappily afflicted.

3. The first Annual Report of the General Board of Commissioners in Lunacy for Scotland, bearing date 28th January, 1859, is addressed to Her Majesty's Principal Secretary of State for the Home Department, and has appended to it the following signatures, viz., "Melgund, Chairman, G. Young, George Moir, James Coxe, W. A. F. Browne." The last-named Commissioner, Dr. Browne, was long and most favourably known in his specialty as the able and very painstaking Physician-Superintendent for eighteen years of the Crichton Institution at Dumfries,—an establishment for the insane which obtained great and deserved celebrity from his lengthened and creditable connexion with it. It was very fortunate for this newly founded Board of Commissioners in Lunacy for Scotland to have obtained the services of so distinguished a member as Dr. Browne, who, from his previous intimate practical acquaintance with insanity in all its phases, gave it both character and weight at once with the public and the profession, and secured for its proceedings an amount of confidence and a prestige from its very first starting into existence, that would have required many years of probation had it been differently constituted.

Dr. Browne's appointment, then, on this Board was a happy move on the part of the authorities who had this important patronage in their hands, and a most just recognition of his strong claims for promotion to an office of so much trust and dignity, which his antecedents so eminently entitled him to have placed at his disposal.

This first Report of the Commissioners bears the impress of a thoroughly practical hand, having been evidently prepared with the greatest care, and arranged in a manner, from beginning to end, clear, comprehensive, and complete. The space which we have at command is so limited that we shall be unable on the present occasion to do little more than indicate some of the contents of so elaborate a Blue Book; and in the first place we may observe that in respect of the state of insanity in Scotland, as to number, we are afforded the following succinct tabular statement:—

"The total number of the insane in Scotland on January 1, 1858, with the exclusion of single private patients, whose number could not be accurately ascertained, was as follows:—

	Male.	Female.	Total.	Private.	Pauper.	Total.
In public asylums, ...	1226	1154	2380	786	1594	2380
In private asylums, ...	330	415	745	219	526	745
In poorhouses, ...	352	487	839	6	833	839
In private houses, ...	810	974	1784	. .	1784	1784
Total, . . .	2718	3030	5748	1011	4737	5748

The proportion of pauper lunatics in Scotland to paupers is estimated at 5·979 per cent. The Report informs us that none of the private insane, placed as single patients, are included in the foregoing computation; and, though using every available means to obtain approximative returns of the private insane, the Commissioners found it impossible to do so in time to embrace them in the present Report.

We think there is much truth in what the Commissioners state in reference to that most important point at present mooted, namely, as to insanity being so largely on the increase:—

"It is probable that the increase of insanity is, in a great degree, only apparent, arising from more attention being directed to the subject, and the consequent discovery of a greater number of persons affected with the malady. However, be this as it may, it is an ascertained fact, that the erection of an asylum always increases the known number of lunatics, by bringing into public notice cases which were formerly hidden from view in private houses."

And again:—

"Now, in relation to this malady, two important facts have been already established:—First, that one chief cause of the affection is hereditary predisposition; and, secondly, that the success of curative treatment depends, in a very great degree, upon its being undertaken at an early stage of the disease. In the course of our investigations we have obtained abundant proof that fatuous female paupers frequently become the mothers of illegitimate children, who, in their turn, grow up imbeciles, or become lunatics; and, although there is rationally more difficulty in tracing the source of idiocy or insanity to a paternal origin, there can be little doubt that male fatuous paupers contribute to this evil. In illustration of these remarks, we shall here give the result of our investigations in one county into this painful aspect of insanity. The number of single patients visited or reported on amounted to 349. Of these, 33 were reported to the Visiting Commissioners as illegitimate; 22 being registered paupers, and the remaining 11 indigent private cases. Of the 349, 113 were females about seventeen years of age; of these, 22 were in circumstances affording adequate protection to their chastity; of the remaining 91, 15 were known to have given birth to illegitimate children, and 5 to have borne more than one child; of the 15 mothers, 3 are known to have been illegitimate, and 12 are at present paupers; of their children, 6 are known to be idiots; there are besides in the county 3 other idiots who are known to be the offspring of insane or imbecile mothers, who are dead or have disappeared. These facts are most deplorable: nevertheless, it would be esteemed a harsh measure to send all such cases to asylums, and yet society has a right to demand that all persons who are supported on charitable funds should be placed in such circumstances, and under such control, as will guard against the propagation of the social evil."

The above is indeed a sad picture of a great social evil, and this only with reference to a limit so contracted; what then must be the enormous amount of the propagation of idiocy and lunacy in the country at large, when facts such as the above can be adduced of the demoralized state of one county alone?

The Commissioners speak unfavourably of the present condition of pauper licensed houses in Scotland, which they found generally over-crowded (a gradually diminishing evil, however), and the ventilation, especially during the night, imperfect. The system under which these houses exist, they state, "is fundamentally wrong, and there is, and must continue to be, a great and pervading want of cheerfulness and amenity."

The public asylums in Scotland are seven in number, viz.:—the Royal or Chartered Asylums of Aberdeen, Dumfries, Dundee, Edinburgh, Glasgow, Montrose, and Perth, and the Pauper

Asylum at Elgin, all of which were quite full, if not overcrowded, and unable, accordingly, to receive a large number of applicants for admission. The Commissioners animadvert upon the low scale of remuneration given to the medical assistants, who have been appointed in nearly all the public asylums to aid the superintendents in the discharge of the arduous duties of their office. In the Edinburgh Asylum, with 640 patients and a revenue in a very satisfactory condition, there are three medical assistants receiving respectively £60, £40, and £20 per annum! Why, a male domestic servant in a respectable family would be more liberally requited for his services. Such economy as this is wretched and miserable in the extreme. And at the Dumfries Asylum, "where there is an excess of revenue over expenditure of £2000, the two assistant medical officers receive respectively salaries of only £60 and £30."

And also the Commissioners pointedly advert to the fact of no steps having been yet taken to secure to the medical superintendents of the Chartered Asylums retiring allowances after a certain period of service. "The duties of these officers," they forcibly and truly state, "are extremely arduous; but, however well fulfilled, they do not lead to any advancement in position. We are, therefore, of opinion, that it would be not only just, but politic, to hold out to them the prospect of a provision for their declining years."

We must now close our notice of this Report, which, as we have already stated, is a remarkably ably drawn-up one, and replete with matter that will amply repay a careful perusal.

4. We shall dismiss, in a very few words, the document in our heading entitled "A Bill to consolidate and amend the Law relating to the Lunatic Poor in Ireland." That Bill, our readers are aware, was ultimately withdrawn by Lord Naas (one of its introducers), the late Chief Secretary of Ireland, so great was the opposition which it met in the House of Commons, and so unpopular was it, as a whole, with the public generally. Our reason for now making any reference to this defunct Bill—one of the many "slaughtered innocents" at the close of the last Parliament—is, that it contained provisions most insulting, and of a most derogatory character to the medical superintendents of the District Hospitals for the Insane in Ireland. It was intended to be, to all intents and purposes, a penal statute—one of pains and penalties—a bad reward to men who had been labouring in a field of all others the most arduous and responsible, and with an effect so successful that the present and past

condition of the public asylums in this country can be appealed to confidently for an answer. We say deliberately that it was a most insulting and a most uncalled-for measure; that it was replete with such anomalies in the way of intended legislation, and so complicated in its entire machinery, that, had any such Bill passed into an Act, the result would have been most destructive to the well-being of the asylums in Ireland and the interests of the insane poor themselves. That much to be deprecated Bill contained no fewer than seven or eight penal clauses (with penalties varying from two pounds to twenty pounds, and to be levied in the most summary manner at petty sessions), all more or less affecting the superintendents: for the escape of a patient, for instance, a maximum penalty of £20 was to be incurred! Our public asylums are second to none for good management in this or any other country, and for half a century they have been conducted without the necessity of inflicting penalties on their officers. It contained a clause also for the purpose of tying up the hands of the resident physicians from giving any advice outside in a case of insanity, which was arbitrary as it was uncalled-for and preposterous. It was also most insulting to the Inspectors themselves: one of its clauses provided for the appointment by the Lord Lieutenant of a "Special Inspector" in cases in which the Government might require special "information," not being able, of course, to place reliance on the regular Inspectors for the same. Altogether, it was a bill *sui generis*, and its ignominious death was rejoiced at by all. But, in the meantime, let us earnestly counsel continued vigilance on this subject, and remind all concerned, that to be "fore-warned is to be fore-armed."

5. The Report from the Select Committee on Lunatics is a most voluminous Blue Book, extending to 388 large folio pages, and to 3424 questions. Its appendices are numerous in proportion, namely, nine; all copious in matter. And, lastly, it has an extended index of the general contents of the Report; which, taken as a whole, is a very valuable Parliamentary document: one that is replete with an amount of miscellaneous information from the best and most authentic sources, which to the specialist in insanity cannot but be most important, and full of the deepest interest. We consider that it redounds highly to our national character and honour to see here a production from the continued sitting of a Parliamentary Committee, *de die in diem*, which evidences the strongest sympathy with the insane, and that the Legislature of this great country is putting every means into requisition to arrive at sound con-

clusions in regard to the best and most judicious treatment and disposal of the insane of all classes in these kingdoms,—in England, at least; for, as respects Ireland, it is greatly to be regretted that when the Bill of the late Government was introduced into the House of Commons, and that its grievous deficiencies and unpopular character were made so plainly manifest, the same privilege was not afforded to it as the sister kingdom, of granting a select Committee to receive evidence from the most competent and experienced sources as to the measure that would be desirable to bring forward for the amendment of the laws relating to lunacy in Ireland. Nothing short of this will satisfy the country, before any new Bill be again brought forward; and, seeing that the Committee for England has educed such valuable information as a groundwork for judicious legislation in that country, surely the same measure of common justice will not be withheld from Ireland, but granted as a matter of fair play and of right. It would, of course, be altogether impossible for us, from the limits at our disposal, to give more than a very few brief extracts from the evidence contained in this very voluminous, and at the same time important Report. We shall confine them to Lord Shaftesbury, the Chairman for so many years of the Commissioners in Lunacy in England,—a nobleman who has already obtained a name and place for the purest and most practical philanthropy which will not easily be forgotten, especially in regard to the best interests of the insane. His Lordship, on being questioned on the vexed question of "Visiting Physicians" to the public asylums, thus replied:—

"I should say, that in nine cases out of every ten a visiting physician is very objectionable; and I do not think it would be at all agreeable to the superintendent, for it would divide the responsibility. A visiting physician could only come in occasionally; and if he does come in, it is to interfere with the system. I do not think that a visiting physician would in the least relieve the labours of the medical superintendent; but that it would tend very much to impede his course of treatment, and certainly not a little to lighten his responsibility. But, depend upon this, if you increase the salaries of these gentlemen, you must take care to affix to them the most serious responsibility, and that you do not allow any person to come in who can in the least divide that with him."

Again, as to the party in an asylum in whom authority should be vested, and the amount thereof, he answers:—

"Considering the most serious and solemn responsibility connected with the governing power in an asylum, the medical super-

intendent ought to be the lord paramount, and be able to order what he pleases for the patients, with regard to diet, clothing, and general care, and in the adaptation of their rooms. He should have the nomination of all the attendants, with power to appoint them and dismiss them, and there *ought to be no appeal from him.*"

Then, with regard to the proper number of patients for the good management of an hospital for the insane, he informs the Committee of his own and his brother Commissioners' views on that all-important point, and, just as we have frequently stated ourselves in these Reviews, as follows :—

"We think that a medical man can manage, as we said in 1844, 250, and it might go so far as 300 ; but beyond 300 I am perfectly convinced that it is impossible for any medical man to pay adequate attention to every case ; for, unless in the management of lunatics, you have what the Germans call the individualizing system, viz., that the medical man should know every patient, and constantly direct his attention to him, you cannot effect any great or permanent cure."

We have only room for one more extract from the copious and exceedingly valuable evidence of Lord Shaftesbury, which again we have the satisfaction of seeing quite accords with what we always advocated. It is with reference to the salaries and superannuations of the medical superintendents and the attendants :—

"I do not know whether it is a matter that could be introduced into the Bill, but I think that the attention of the public should be very much drawn to the state of the medical superintendents in these asylums. It is perfectly clear that to the greater proportion of the medical superintendents in these asylums very much larger salaries should be given ; and unless you do that, you cannot possibly secure the very best service. Although there are some men who are really discharging their duty in the most admirable manner, yet I think that the labourer is not receiving that of which he is worthy, especially when you come to such cases as Hanwell, where Dr. Begley, after twenty years' service, receives no more than £200, with his house, and an allowance of rations. The great object must be to raise the *status* and character of the superintendents to the highest possible point. . . . . .

"One of the great defects of the present system is, that the salaries of the medical officers are much too low for the service they perform. I think that the country ought to secure the very best talent and responsibility that can be found, and they ought to raise their salaries higher. I believe in some of the asylums the salaries are higher ; but I hardly know one where the salary is adequate to the work done. . . . . .

"I cannot think that any superintendent ought to receive much less than from £500 to £600 a year, besides a house and allowances. . . . . .

"I wish to express my opinion, that the period for the superannuation of the attendants and the medical officers should be fixed; that it should not be left optional to the visitors; at present it is not to be allowed under 20 years. If it is not a fixed period, it is optional with the visitors whether they will or not grant a superannuation at that time; and I think it is but just that persons engaged, as the superintendents are, in these most onerous and serious duties should have before them a certainty of the time at which they can retire. And there is another reason for it: it has been found to operate injuriously. It operates very beneficially for the useless and the idle; for a man of that character will feel that when his period of 20 years is up, the magistrates will say, 'We may as well get rid of this idle man, and get a better;' but if there happens to be a really valuable man, who is to them almost indispensable, they will say, 'Well, but he is too good to lose; we will keep him on for a year or two longer; we cannot part with him.' A medical man of great eminence said to me the other day, 'I have known it to happen in the case of a very valuable servant; when his period of superannuation has come round, he would be put off for a year or two years.'"

"Do you propose that every officer or servant of an asylum should after 20 years' service be entitled to claim his superannuation if he wishes to do so?" "Yes, if his character were good."

"Would you retain the limitation of the right to persons of 50 years of age?" "No; I think that would be very hard indeed; and reference must be had to the peculiar nature of the duties they have to perform. It is not like the ordinary work in a banking-house, or in a Government office; nor even is it like the toil they have to undergo in military or naval service; but the wear and tear upon the nervous system of the attendants and the Medical Superintendents is such that it may be considered almost a standing miracle that so many of them can bear it for the whole 20 years, before they arrive at the period of superannuation. I have received accounts from the attendants, and from the medical men themselves; and their statements go to show that, in proportion to the whole number, there are more cases of insanity arise among the medical men who are so employed, and the attendants who are so employed, than from any other class. The Committee can well imagine what it must be to be perpetually in the presence of lunacy, some of them in the most exalted state, and some most despondent, but never hardly to pass a night in which they are not disturbed—never to associate with others, nor to have any holiday or recreation, or any relaxation of any kind—to be perpetually in the presence of these lunatics—it has the most lowering and most miserable effect upon the nervous system."

"Is it not the fact that the Act gives a discretion to the magistrates not only as to the time when the superannuation may be given,

if an officer is 50 years of age, and has served 20 years, but also as to the amount of the superannuation. Would you take away the discretion in both cases,—allow every officer and servant in a lunatic asylum to demand, after 20 years' service, a fixed amount of superannuation?" "No; I would not go to that extent. I think that a discretion might be left with the authorities, and I have no doubt they would act with liberality. I would not make it imperative that the officer must have attained 50 years of age; but I should propose that the period of superannuation should be fixed at 15 years instead of 20."

"You would give to every officer a *right* to claim superannuation, subject to the discretion of the magistrates as to the amount, after 15 years' service?" "Yes."

"Have any cases occurred in which a Medical Superintendent has wished to retire after 20 years' service, and has not been allowed his superannuation?" "I know of no case within my own knowledge; but I think that there must have been some, from the communication that was made to me by a Medical Superintendent."

"Is there any particular reason which induces your Lordship to press this upon the Committee?" "Because I think it would tend to improve the status of the medical men."

6. We hail with peculiar pleasure, at all times, the advent of the consecutive numbers of this most valuable *resumè* of psychological literature; and it is with more than ordinary satisfaction that we take up the parts which now lie on our table. In some of our former notices of this serial, we ventured to criticise, but in no unfriendly spirit, the character of its contents, and to suggest attention to the fact that these were hardly of that apposite nature which a first-class scientific and psychological journal should appropriate to itself. The pen of the able editor was apparent, but we certainly noticed a heterogeneous character in not a few of the contributed articles on which we felt in duty bound to animadvert. In the quarterly parts of the present year there is a noticeable improvement in this respect, while the style of the entire is not only *ad rem*, but scientific and scholar-like. Our limits will hardly permit more than a glance at the contents of this highly interesting and important journal, which, however, shall now be attempted.

In the "Psychological Quarterly Retrospect" will be found a mass of information at once interesting and entertaining. The subjects of education, prison discipline, medical and civil jurisprudence, together with other similar topics, receive abundance of illustration from these *notitia* of passing events. In the numbers for January and April are to be found two clear, sketchy papers on "*Literary fools*," including notices of authors, French and English, which are exceedingly interesting. Some

of our readers will hardly be prepared to discover *Smart*, the prose translator of Horace, under this category. Two kindred articles, under the titles of "*Psychological Studies*," embracing notices of Don Quixote and Dante (in the numbers for January and July), will repay a reading. The above papers come under the head of lighter reading, but there is no lack of more weighty material in the current parts of the Journal. *Metaphysics* have their due share in the paper on "The Pyschology of Kant"—and that on "Sir William Hamilton's Lectures on Metaphysics." The latter is an able review of the two volumes of that eminent philosopher's tractates on Metaphysic and Logics, which have lately issued from the press. This paper will be found valuable as an analysis of the profound metaphysician's views of this noble science, as well as a comparison of these views with those of Locke, Stewart, Reid, and others.

The professional reader will find abundance to occupy some studious hours in the papers on Puerperal Insanity, Convulsion, and General Paralysis, as well as in the reviews of scientific works, which are here submitted.

The article on "*Convulsion*" (No. XIII., January.), introduces to public notice some recent discoveries and investigations with respect to nervous and muscular action, which are truly astonishing, and calculated, if followed up by further discoveries in the same direction, if not to revolutionize the practice, at least considerably to modify the conclusions of physiologists and pathologists in an important department of medicine.

Dr. Radcliffe appears to deserve the credit of introducing some highly important and suggestive facts connected with the nerve force and its mode of action, to British students, from the French school, and especially from the researches of Dr. Du Bois-Reymond. The Journal thus states:—

"The principal facts under this head are these:—Muscle, in common with nerve and other, if not all, animal tissues, is the seat of definite electrical actions. These actions are only manifested in irritable and living muscle; they are proportionate to the degree of irritability and vitality; they die out as the signs of irritability and vitality disappear; and when these signs have disappeared, and the muscles have passed into the contraction of death, *rigor mortis*, they are altogether at an end. In ordinary contraction, also, there is an unmistakeable *weakening* of that electrical action which naturally belongs to muscle in the state of relaxation or elongation."

These are very singular statements, and will be new to some of our readers. We were wont to consider the phenomenon of muscular contractility as due to the increased energy

and action of the nerve-force, whatever that may be; but, if the experiments of the French philosopher referred to be correct, and they have every appearance of being so, it would seem that muscular contraction is connected rather with the diminution or suspension of this action. The experiments in question are so interesting that we must endeavour to make room for a lengthened quotation respecting them:—

"In these experiments, weights of different sizes are suspended from a small hook that has been previously attached to one of the hind legs, a little above the heel. The frog is then held up by its fore limbs, and a weight that is just sufficient to put the hind leg gently upon the stretch is placed upon the hook. In the next place the toe of the weighted leg is pinched, and the weight is changed for one heavier, until the animal is no longer able to withdraw its leg from the torture to which it is subjected. This being done, the next thing is to divide the spinal cord immediately behind the second pair of nerves; and to go on testing the muscular power of the paralyzed legs. The results are very strange. Immediately after the operation, the muscular power that can be put forth by the weighted leg when the toe is pinched is sometimes nil, but generally it is no more than a third or fourth of what it was before the operation. Fifteen minutes later this power is evidently rallying. In twenty or five-and-twenty minutes it has recovered all it had lost. An hour after the operation it is greater than it was before the operation—perhaps doubled. An hour or two later still, it is certainly doubled, and possibly trebled; and from this time up to the twenty-fourth hour, when the increase generally attains its maximum, it goes on slowly augmenting. The particulars of two experiments with very fine frogs (A and B) were as follows, the weights raised being expressed in grammes:—

	Before the Operation.	Immediately afterwards.	5 minutes afterwards.	15 minutes afterwards.	25 minutes afterwards.	1 hour afterwards.	2 hours afterwards.	4 hours afterwards.	24 hours afterwards.	48 hours afterwards.
A	60 Gram.	20	45	60	80	130	140	140	150	150
B	60 Gram.	10	30	40	60	100	120	130	140	140

"When the increase of the muscular power has attained its maximum, it may remain nearly stationary for six, ten, fifteen, or twenty days, and after this time it fails by slow degrees. In a month, if the animal lives, this power will have fallen to its original value before the operation; and at the expiration of six, seven, or eight

months it may have fallen still lower, until it is not more than a third or a half of this value. It is possible, however, that the increased muscular power would not have failed in this way if care had been taken to exercise the paralyzed limbs by galvanism.

"Nor is it easy to agree with Dr. Marshall Hall in thinking that this increase of muscular power is due to an increased stimulation of the muscles on the part of the spinal cord (which inordinate stimulation had come into play because the controlling influence of the brain had been withdrawn), for there are other experiments which show plainly enough that the muscular power is augmented, not only in a similar, but even in a higher degree, after the muscle has been cut off altogether from the spinal cord.

"In the paper on muscular irritability, to which reference has already been made, and which is deserving of study, as well for the facts as for the opinions contained in it, Professor Engel, of Zurich, has shown that muscles are more prone to enter into the state of contraction after the complete removal of the cerebro-spinal system. In this experiment he clips out the whole of this system, bones and all, and, after five or ten minutes, he finds that the muscles have become so irritable as to be thrown into a state of contraction by a blow on the table. He finds, indeed, that the muscles are as irritable as they are in narcotized frogs.

"Some very conclusive evidence to the same effect is also furnished in the following experiment by Dr. Brown-Séquard. In this experiment the spinal cord of a frog is divided immediately behind the roots of the brachial nerves, and then the nerves proceeding to *one* of the hind legs, cut through at the points where they leave the cord. *Two hours later both the hind limbs are separated from the body*, and the contractility of their muscles is tested by the prick of a needle and by galvanism. This is the experiment. The result is, *that the 'irritability is augmented' in both these limbs, and that this augmentation is most considerable in the limb whose nerves had been divided —in the limb, that is to say, which had been cut off from the spinal cord.*' (pp. 60-63.)

"Even the action of the will upon muscle is not allowed to be that of a stimulus:—

"'Is it not certain,' says Dr. Radcliffe, 'that the will acts in this case by stimulating the muscle to contract? It is difficult, no doubt, to think differently. It is more than difficult to wean the mind from so old an idea. But, on the other hand, it must not be forgotten that the will may have *acted* in bringing about muscular contraction, not by imparting anything to the muscles, but by withholding something from the muscles; and this being the case, we may well refuse to allow a mere opinion respecting the action of the will, however sanctioned by time that opinion may be, to rank as an objection to a view of the action of "nervous influence" in muscular motion, which view appears to arise necessarily out of the general history of "nervous influence" as concerned in muscular motion.' (pp. 64, 65.)"

It is further shown, that muscular contraction is not produced by the stimulus of light, heat, or cold, or, lastly, by that of any chemical or analogous agency. The author's conclusion is, "that muscular *elongation* is produced by the simple physical action of certain agents, electricity and others; and that muscular *contraction* is the simple physical consequence of the cessation of this agent."

The concluding paragraph of this article presents the importance of the objects, discussed in a clear light, and we therefore quote it:—

"Such is a free sketch of the argument by which Dr. Radcliffe attempts to show that convulsion in all its forms—tremor, convulsion proper, and spasm—must be looked upon in a very different light to that in which we have been in the habit of regarding it. The subject is one of great importance—of special importance in psychological medicine; for is not convulsion a most common symptom of disorder of the brain? The subject is one also which claims immediate, as well as serious attention; for if Dr. Radcliffe is right, the natural conclusion is, that the more appropriate means of treatment will be, not those which are calculated to calm excessive stimulation, but those which will sustain and rouse the powers of a flagging system."

Under the head of *Reviews*, several volumes, interesting to the psychologist, pass under the observation of the editor, in these numbers of the Journal, some of which are noticed, as we think, with just severity, while others have a rather hard measure dealt out to them. Among the former class we may notice the treatise "On the Ganglionic Nervous System," by James George Davey, M.D. We fully agree with the editorial remarks made on this volume, as discovering much that is crude and inconsequentive in its reasoning, and unsupported as regards its adduction of facts. But we are by no means disposed to agree with the rather wholesale strictures passed on the admirable little manual of Dr. Noble on the "Human Mind in its Relations with the Brain and Nervous System." Notwithstanding the editorial protest here offered to some of Dr. Noble's positions, we look upon his volume as a really "good handy book on physiological psychology." It is quite true that some of the most recent experiments of Dr. E. Brown-Séquard go a good length to qualify some few of the anatomical remarks of Dr. Noble, chiefly, perhaps, in relation to the *cerebellum*, viewed psychologically, but the body of the work is sound in principle, correct in detail, and manifests so much of the thoughtful metaphysical observer, as well as the practical physiologist, that we have no hesitation in recommending it to the

entire class of general students, for whom it was originally intended.

Art. II., in No. XIV. of the Journal (April), "On the Artificial Production of Stupidity in Schools," is a paper which we should desire to see in the hands of every parent capable of appreciating its sound advice, as well as of every person in the kingdom intrusted with the educational charge of children. The acknowledged deficiency in the present instruction afforded in our schools, especially those for the poor and working classes, is here traced, and with much truth, to the culpable neglect of the training afforded to the powers of reflection, comparison, volition, &c., while the sensational powers and those of spontaneous remembrance are over-taxed. Most striking and lamentable are the instances here adduced of this faulty mode of education.

The glaring deficiencies, and worse, occurring in the public "elementary schools" of Great Britain are illustrated by some anecdotes and facts, which would be amusing in the extreme, but for the depth and the seriousness of the evil exposed. The same remarks apply to the able writer's exposure of the evils existing in the schools of the same nature for the upper classes.

In the Number of the Journal for January will be found some exceedingly valuable and suggestive matter, connected with *crime*, in its relation to *insanity*, under the heads of "The Obscure Mental Disorders of Criminals," "The Statistics of Justice;" and also in the April Number, in the article entitled "Judicial Psychology in France." The subject here treated is as delicate as it is difficult. To ascertain the precise point where individual responsibility, as regards sin against the social system, ends, and the State's accountability, as intrusted with the guardianship of the common weal, commences, is a problem, for the solution of which rare endowments, as well of judicial skill as of physical and psychological knowledge, are required. The articles above referred to throw considerable light on the subject.

The October and concluding Number of this Journal for the current year, in point of interest and valuable matter, is quite equal to its predecessors. Whether *variety* in its contents has been sufficiently studied, may admit of a question. Very considerable prominence is given to the medico-legal department of mental disease, and also to the statistics of homicide and suicide. Perhaps some abridgment and condensation here might have rendered this Number more scientifically acceptable and useful. We are extremely glad to notice the terms of merited reprobation with which the mawkishly wicked efforts

of some novelists and poetasters to throw an air of interest and romance over the crime of suicide is noticed by the editor. Such attempts are as disreputable and unphilosophical as they are morally bad to a degree, and well deserve the exposure with which they are here visited.

A cursory glance is taken at the "Belfast Revival," in the Psychological Quarterly Retrospect, and in it the balance seems to us to be fairly held between those interested parties who have endorsed the entire movement as of Divine origin, ignoring its evils and excesses, and those who attempt to set the whole aside as mere human folly, and worse. We are glad to perceive sound mental philosophy and pathological skill brought to bear on this extraordinary but important and interesting movement, and, now that its crisis may be considered as past, and its results appreciable, we earnestly hope that the editor and his contributors may be induced to return to its consideration at no distant date. The pamphlet of Archdeacon Stopford, entitled, "The Work and Counter-work; or, the Religious Revival in Belfast," is in a separate article reviewed, and highly and deservedly commended. But we must correct the writer of this critique on the Archdeacon's excellent and well-timed publication in one point, in which he states that "the clergy, of all denominations, were wholly unprepared for the emergency; were ignorant, speaking generally, of what it was they witnessed; and do not appear to have imagined that medical men could have any special knowledge of the causes in operation, or any special duties with regard to the effects produced." Now, so far at least as one of the eminent and experienced ministers of religion in Belfast, the head-quarters of the "Revival," was in question, we are enabled to state, from personal knowledge, that the Rev. William M'Ilwaine, Incumbent of St. George's Church, was not "ignorant" of, or slow in discovering "the devices" that were going on, or in denouncing, both from the pulpit and in print, what he "witnessed" of the extravagancies and immoralities of the "struck" ones, and this, we have reason to believe, with the best effects. Had others of his brethren acted in the true spirit of religion, as both he and subsequently Archdeacon Stopford did, they would have been better fulfilling their sacred mission on this trying occasion than throwing themselves into the movement so inconsiderately as was the case, but which, of course, they felt it their duty to do. Mr. M'Ilwaine deserved the more credit for his moral courage in resolutely and perseveringly testifying against what was palpably the work of man in this so-called "Revival," inasmuch as not only "all the pious ladies of Bel-

fast," as the writer in the Psychological Journal remarks, "would have combined to destroy the practice of a doctor who had expressed a doubt of the Divine origin of the prevailing visitations;" but "pious" ministers hesitated not to denounce him as "a heathen man and a publican" for his faithfulness. Such was the reign of terror that existed, if it do not still, in the enlightened town of Belfast during this "revival" of religion(?).

8. The contents of the "Journal of Mental Science" for the past year, have been varied and valuable, as hitherto; and though the subjects discussed are generally of a special character in relation to insanity, yet they are of the utmost importance to each member of our common profession to be acquainted with; and hence this Journal is eminently entitled to a place in the library of every medical practitioner desirous of keeping himself *au courant* with things as they are in reference to insanity, a specialty of the profession which of late years has been commanding so much attention, and is of such deep moment to all. The January Number contains, amongst other articles, able reviews on the Report of the Royal Commissioners of Inquiry into the Lunatic Asylums of Ireland; Dr. Nugent's letter thereon; and the Twelfth Report of the English Commissioners in Lunacy; with Notes on the Prognosis in Mental Disease by C. L. Robertson, M.B. Cantab.

The April Number has an excellent paper, by Dr. Conolly, on the Residences for the Insane, and one by Dr. Bucknill, on Lunacy Law Reform, and the proposed legislation on Irish Asylums, which show much practical acquaintance with the points brought under observation. In the July Number is a valuable paper by Dr. Boyd, of the Somerset Asylum, on the Necessity of the Study of Insanity as a branch of medical education, in the course of which he remarks that—

"If cases of insanity were received into casual wards, fitted up for the purpose, in an hospital, even for a period of fourteen days, the medical student would have an opportunity of being made acquainted with the preliminary treatment during the acute stage, and thus obtain a practical knowledge which he would find most useful hereafter. The lecturer on the practice of medicine would have the means of referring to cases in, or which had been in the hospital, for his illustration of that portion of the lecture, which must now be without illustration, and, therefore, comparatively uninteresting. Large numbers are not essential; a few cases will serve for clinical instruction."

The suggestion contained in the foregoing extract is, we think, well worthy of being acted on, as the systematic rejection of cases, having the most remote approach to mental disease, from ordinary hospitals, has often surprised us. The medical student should not thus be left entirely ignorant of any practical acquaintance with an affection which, sooner or later, he will be called upon to treat in private.

In this Number, also, is an elaborate review of the First Report of the General Board of Commissioners in Lunacy for Scotland, which we have already shortly noticed ourselves. Whilst, however, admitting the general excellence and fairness of this review, we must, in passing, express our regret at its tone and spirit in some respects. The Journal in which it appears professes to be the organ of the Association of Medical Officers for the three kingdoms, and, therefore, should be careful in avoiding any invidious national comparisons with the establishments to which those officers are attached. Forgetful of this catholic spirit, the able writer of the review in question speaks like an Englishman of what he calls *Scotch* asylums; reminding the Scotch, that although at one time a very literary nation, having, "some fifteen years ago, before the erection of the English County Lunatic Asylums, had the best public asylums in the island," now, he states, "lunacy, medicine, and literature, have progressed in the southern part of the island at a pace with which our friends in the North have hardly kept up." The writer intimates that, "the reports brought home by English Superintendents, out on their holiday, of the condition of the Chartered Asylums," do not quite bear out "the high character" of these asylums; or the "flattering testimonials with which the young assistant physicians of these institutions have made their *debut* in the south." We repeat, that we think it very unhappy, the organ of a general association should thus so unnecessarily throw in an apple of discord by the introduction of "we," the south, and "they," the north ends of the island. It would have been much better had the *we* pointed out impartially what was good and what was bad in the three sister countries, and not become identified with one in particular, and hold it up as all perfection in "lunacy" progress, which we respectfully deny. We have had ourselves opportunities of seeing the working of some of the principal Chartered Scotch Asylums, and the impression left on our mind was a very favourable one of their general conduct. We believe they excel the English asylums in some most important points of management, namely, that

of giving the resident physician "paramount authority" in the entire arrangement of the house, and in engaging and dismissing the attendants, without any interference on the part of Boards of Directors. We know that a very different state of things exists, or at least did, within a recent period, exist, in this respect, in not a few of the English County Asylums. Nor do we agree with the writer in his statement of the want of classification in the Scotch asylums, and of the "parish pauper patients being sent sadly to the wall by the admission of private patients."

We have often thought that it would be a great boon to the public in England and our own country, if something akin to the Scotch system were introduced into them; if higher class asylums were by some means connected with the county and district asylums for the reception of private patients of all classes; and we think we can see an evident tendency to a consummation like this, so devoutly to be wished for on every account on the part of both the public and the authorities. The publicity of such institutions would afford the best guarantee against any of the evils stated to be connected with private asylums, the proprietors of which, no matter how personally honourable and upright, are placed in a false position before the public.

The last issued Number—that for October—has the official Report of the annual meeting of the Association of Medical Officers of Asylums and Hospitals for the Insane, held in Liverpool in July, with the address of the President, Sir Charles Hastings. The meeting was not either largely or influentially attended, nor does there appear to have been any subject of much interest discussed thereat. The next annual meeting—that for 1860—was fixed to be held in London, under the presidency of Dr. Bucknill, who, we have no doubt, will perform the duties of his important office with much *eclat*. There is a very copious Report in this Number of the extraordinary case of Miss Ewings, tried under a commission *De lunatico inquirendo*, at Exeter, in August last, which lasted five days, and which resulted in the jury pronouncing Miss Ewings not to be of sound mind, "so as to be sufficient for the government of herself and property." This lady, aged 80, had bequeathed the great bulk of her property, namely, £12,700, to Dr. Shapter, of Exeter,—an entire stranger to Miss Ewings; whose acquaintance with the lady commenced by his being called in to visit her in his professional capacity shortly after she had been removed from an asylum, and during the course of his professional attendance she insisted on his taking her instructions for

her will, and making him her residuary legatee, to the above amount. The verdict of the jury, however, has of course rendered this will null and void.

9. Dr. Arlidge, the author of the recently published volume "On the State of Lunacy," informs his readers, in his prefatorial observations, that—

"The subjects discussed will, on the one hand, show that the present is not to be reckoned as a medical treatise, but as one addressed to all who are interested either in the legislation of lunatics or in their well-being and treatment; and, on the other, make good, it is trusted, the assertion that it occupies an untrodden field in the literature of insanity, and that its matter is good, even should its manner be thought not so. Assuming the publication of the book to be justified, it only remains for the author to add, that he has not undertaken its composition without bringing to the task thirteen years' study and practical experience among the insane,—treated in private houses, in licensed houses, and in public asylums; together with the fruit of observation, gathered from the visitation of most of the principal asylums of France, Germany, and Italy."

From the examination which we have been enabled to make of this book, we consider it evidences much careful consideration in its compilation, and that its contents generally and suggestions are valuable, and deserving of the best attention. Dr. Arlidge has been a very painstaking and industrious, and, we may add, useful labourer in all matters in connexion with the best interests of the insane; and this, his latest contribution to our stock of information as regards insanity, does him infinite credit, and will, we are satisfied, be found a most useful work of reference,—its several details being collected from the best and most authentic sources, and accordingly an indispensable book in the hands of all who desire either to study insanity not so much medically as in its social aspects, or to refresh the memory on points of daily interest to be acquainted with, and which will be here found faithfully recorded and practically discussed. It is dedicated to Lord Shaftesbury—a nobleman eminently deserving of this mark of respect; and is divided into eleven chapters, severally treating of the number of the insane; the increase of insanity; present inadequate provision for the insane in asylums; curability of insanity; causes diminishing curability, and involving chronicity of insanity; the same subjects continued, as operating within asylums; on the future provision for the insane; registration of lunatics; appointment of district medical officers on the Lunacy Commission; and lastly, on some principles in the construction of

public lunatic asylums. Thus it will be seen from this synopsis that Dr. Arlidge's volume abounds with subjects of the greatest interest to all who are engaged, directly or indirectly, in the care and treatment of the insane.

10. Dr. Burns, we perceive from his "Dissertation," is a follower of Comte and an admirer of Kant. Strange to add, here and there throughout his "Inaugural," references to a Divine Revelation of a respectful kind occur, while its Author is always named with devout acknowledgment. Dr. Burns tells us, and truly, that "for the Christian philosopher his belief in the existence of a Supreme Creator and the glorious hope of an eternal existence in a future state rest upon other and higher grounds than man's wit or wisdom."

We are not, however, distinctly informed what those higher grounds are, or where they are to be discovered. This is the vital defect of this elaborate, highly intellectual, and, we are bound to add, moderate and respectful, though erroneous plea for materialism. That we do its author no injustice in so saying, will be apparent from the following quotation, where his views are clearly expressed :—

"Let us now, laying aside, as much as is possible, such prejudices as spring from the bias of previous education and habitual modes of thought, examine fairly, upon the data already enumerated, whether there is sufficient testimony for the generally accepted belief in the existence of mind as a real entity, rather than a mere process. Has it an independent and possibly separate existence, apart from the nervous organism, through which, as an instrument merely—though terrestrially, at least, indissolubly connected with it—it brings itself into relation with the universe? Is there any solid basis for the belief in an immaterial principle, unconsciously manifested in the preservation and development of the body, consciously in the mind? Do ideas exist implicitly *in* the mind, or do they constitute mind itself?"

The latter term of this proposition, which Dr. Burns "at once and thankfully accepts," and the proof of which, or rather its attempted proof, are the staple of his essay. In thus, however, avowing himself a materialist, he proceeds to "deny absolutely and at the outset that materialism is but a synonym for infidelity," and we are bound to accept this disclaimer, if by infidelity be meant all disregard for a Divine Being, or disbelief in Divine religion. But how Dr. Burns can reconcile his theory with belief in the inspired volume, which states, in very express terms, the exact contradiction to his conclusions, we are at a loss to determine. The genesis of man, as given by In-

spiration, expressly states the constituent parts of his being as a body, formed of the dust of the earth, and a spirit (or the breath of *lives*, as the original record with marvellous accuracy expresses it). This is in direct opposition to Dr. Burns' theory, that man, in his highest aspect, is but organized matter. With this serious exception, this "Inaugural" of Dr Burns discovers, we are free to admit, both acute thought and accurate reading.

10. The small and unpretending volume of Dr. Robinson, on "The Treatment of Mental Disorders," contains more information of a really practical nature than many more pretentious and elaborate treatises on the same important subject. Dr. Robinson has come to his task prepared by much professional experience, and has treated his subject with the perspicuity and simplicity of one well acquainted with it, and whose distinctive object was the information of his readers, and the amelioration of society at large. After a brief review of the physiology and pathology of the nervous system, Dr. Robinson proceeds to the classification of mental disorders, then treats of its etiology, and finally of its curative treatment. Under the first of these heads is introduced a classification of the subject, adopted from the Report of the Metropolitan Commissioners in Lunacy, which appears to us as practically useful and scientific as any we have seen.

1. Mania, which is divided into—
   - *a.* *Acute Mania*, or raving madness.
   - *b.* *Ordinary Mania*, or chronic madness of a less acute form.
   - *c.* *Periodical* or *Remittent* (intermittent?) *Mania*, with comparatively lucid intervals.

2. Dementia, or decay and obliteration of the intellectual faculties.

3. Melancholia,
4. Monomania,
5. Moral Insanity,

} These three forms are sometimes comprehended under the term Partial Insanity.

6. Congenital Idiocy.
7. General Paralysis of the Insane.
8. Epilepsy.

In treating the forms of mental disorder, Dr. Robinson enters sparingly, but, as we think, very judiciously, into the vexed question of the accountability of the insane, in a legal sense, and also, as connected with the same subject, with that of the amount of personal liberty assignable to the class of our fellow-subjects so afflicted. His remarks under both these

heads will be found in the first chapter of Part II., and deserve an attentive consideration. We only regret that our limits forbid extracts, else we should willingly afford them. The work is enhanced in value and usefulness by numerous statistical tables, which help to throw additional light on the present state of mental disease throughout Great Britain, while the *cases* given will be found both useful and available to the medical practitioner. On the whole, we have much pleasure in commending Dr. Robinson's useful Manual to general perusal. Here and there some statements occur which, we think, may not be destined to insure general or, at least, universal acquiescence from the psychological portion of our readers; as, for example, where the author appears to ascribe, without reservation, the "demoniacal possessions" of the Jews (meaning, it is presumed, those of Scripture) to other than supernatural causes. If this be the author's meaning of the passage, he would do well to reconsider it, as coming from an avowed believer in the Christian Revelation. This, however, and one or two other minor points, which we forbear to notice, as of trifling moment, cannot detract from the value of the entire work.

11. Mr. Hulme's translation on the all-important subject of "Hallucinations" is a very seasonable book, and one that has been ably treated by its author, Dr. Brierre de Boismont. We have not seen the volume in its original form, but, judging from the easy run of the English version, and its entire want of idiomatic peculiarity, we are bound to accord to the translator the meed of care and ability for the task which he has undertaken and so successfully executed. The professional reader will not be disappointed, whether as to interest or profit, in the body of this work, and in the chapter (xiii.) on the *treatment* of the mental malady will be found highly useful and important hints and directions, but for which we regret not being able to find room as we would have desired. The general reader also will find himself introduced to a subject which is, or ought to be, of interest to society at large, and by its perusal he will discover means of accounting for many natural and psychological facts, which, but for the light thrown on them by this and kindred treatises, would take their place among the marvellous and miraculous. We need scarcely add, that knowledge of this sort is peculiarly suited to the present day, and to the circumstances of daily occurrence around us. We cordially commend the work to the careful study of all interested in the subject so well handled in its pages.

12. The issue of the American Journal of Insanity, the only one we have beside us at present, that for January, 1859, has, amongst other valuable and practical papers, one of great interest on "Marriages in Consanguinity," which well merits the attention and consideration of the physician, physiologist, psychologist, and moralist. It is translated from M. Devay's "Hygiène des Familles." The author, after entering much at length into this important subject, gives his "own facts and observations" in connexion therewith, from which we take the annexed extract:—

"It is now many years since our researches upon this subject were undertaken. In 1846, on the first publication of our 'Family Hygiene,' we pointed out certain facts tending to throw light upon the question. 'Our cases,' we then wrote, 'are thirty-nine in number. Thirteen have been collected within the circle of our acquaintance; the other twenty-six have been furnished either by our own patients or from authentic sources. In the first category we find two males who have married their own nieces; three aunts who are united to their grand-nephews; all the rest are alliances between first or second cousins. Now, eight of these marriages have been sterile, although the parties were by no means of disproportionate age; four have engendered scrofulous children, cut off in the flower of their years, not one of whom has passed the age of fourteen. The last of these unfortunate alliances, it is true, brought into the world an offspring of sufficient vitality, but so afflicted by ichthyosis—a loathsome cutaneous affection—as to have been seriously embarrassed in growth, and in worldly prospects. We may add, moreover, that two of the scrofulous and ricketty children were born with supernumerary fingers, as though nature had sought to associate deformity with the original feebleness of constitution. Among the twenty-six cases included in the second category, we find eleven unfortunate alliances,—all of them between first cousins. An epileptic child is the issue of one of these marriages; three of the others have produced children who have died in convulsions, or of hydrocephalus. Among the other seven we reckon two sterile unions; and of the five remaining, two of the offspring present a state of health which leaves very much to be desired. Four only of these marriages, to complete the number of twenty-six, have been fruitful. Their offspring appear to enjoy a moderate degree of health.' . . . . . .

"Let us study the language of facts. To the thirty-nine observations cited in 1846, we have now to add eighty-two collected since that time, and which relate to facts we have ourselves verified. We pass over some others of a semi-authentic character, which, having been furnished us by credible persons, to be sure, but who were strangers to the science of medicine, pass with us as only hearsay evidence.

"It will be readily perceived with what delicacy and discretion

researches of this nature have to be made. While other points in the domain of medicine require a detailed circumstantial examination, here the honour of the physician demands a prudent reserve. It is not for the interest of a family to be thus made an object of notoriety.

"We have a total of 121 cases, in which it has been permitted us to see the results of the influence of consanguinity on conception and its products. The eighty-two new facts present a pathogenic summary, having much analogy with the preceding thirty-nine. Of these eighty-two, the number of cases of sterility reaches fourteen; which, added to the eight previously noted, makes the whole number twenty-two. These alliances, which are, for the most part, of from eight to ten years' standing, were between cousins or the children of cousins. Four only were of uncles who had espoused their own nieces. Among the twenty-two cases of sterility we reckon sixteen that were absolute,—that is to say, without conception; and six in which, although conception took place, it was followed by abortion in the first months of gestation. Out of the whole number of 121, we have established seventeen cases of abortion. Thus we have on the one hand six abortions, not followed or preceded by any ordinary conception; and, on the other, eleven cases in which there was, either before or after the abortion, a full term pregnancy.

"Whenever the attention of observers and physicians shall be sufficiently drawn to this matter, they will be able almost always to establish this important fact, that nature seems to testify by degrees its repulsion towards marriages founded on consanguinity. Very often (and this may indeed be regarded as a favourable result) it visits them with sterility; and if they be fruitful, it makes of their issue, odd, incomplete specimens, and brands them with anomalies. At last it has still in reserve those deviations from the physiological type of the race, the veritable monstrosities. In any considerable series of products, the issues of consanguineous unions, we almost always meet with one or more specimens affected by those singular accidents of organization so appalling and so afflicting to a family. We sometimes find, too, congenital blindness, as well as cases of hemiplegia. Of all the abnormal deviations, that which we have most frequently observed is a superfluity of fingers or toes. We have seen in a family of three children, whose father and mother were related in the fourth degree, two of these children presenting supernumerary little toes; the hands were normal. In our 121 cases we have met with this anomaly seventeen times; and of these, thirteen times in both hands. The contrary phenomenon, the absence of fingers or toes, occurs less frequently; twice only have we observed it, and in both cases in the hands alone: the little finger was wanting."

An extended notice of the Royal Commissioners' Report on the condition of the insane in Scotland is also amongst the contents of this Number of the Journal.

13. Dr. Seymour's "Letter" to Lord Shaftesbury "On the Laws regulating Private Lunatic Asylums" evidences an intimate acquaintance on the part of the writer with the subjects discussed in it, which are of much interest, and deserving the attention of the philanthropic and influential nobleman who has been thus addressed. Dr. Seymour had formerly been one of the Metropolitan Commissioners in Lunacy, an office which he resigned twenty years ago, his private and hospital practice requiring his undivided attention. He has still, however, not lost sight of the interests of the insane, as his present Letter manifests; and also a former publication of his on the "treatment of insanity," which was not without its merits. He states his principal object in the "letter" before us is, "to explain the laws relating to lunatics (in private asylums), compare them with those of a neighbouring kingdom, and support considerations to amend the difficulties under which the laws avowedly labour." Dr. Seymour recommends that every means should be used to induce the relatives and friends of patients in private asylums to visit them; and on this subject he quotes from an examination of Sir H. Halford before a Committee of the House of Commons in 1814–15, who, to the question, "what, in his opinion, would best conduce to the well-being of lunatics in confinement?" replied, "Oblige their friends to visit them." As a general rule, this, no doubt, is very desirable, but the exceptions are not few in which the visits of friends would do great and positive mischief, and in all cases much discretion is required.

"When a Commission in Lunacy has been sealed," Dr. Seymour observes, "the unhappy object is placed in a lunatic asylum, or in a house with attendants, under the care of the person to whom he is intrusted; and of course in these cases his personal liberty is completely, or nearly so, abridged: nothing short of confinement has been adopted by our laws. In this respect it appears to me that the authorities do all, and the family of the lunatic little. On the contrary, in France the greater part of the care is thrown on the family and the sanction received from the Court."

The author then subjoins a translation of the law of "interdiction" in regard to insane persons from the Code Napoleon, known to have been the production of the most learned and experienced of the French Bar, after long deliberation. This "interdiction" contains twenty-four clauses with reference to the powers to be exercised in regard to an insane patient; and also a second portion of it, entitled, "Family Council," containing fourteen clauses. Dr. Seymour observes, in respect of the system pursued in France:—

"It must be obvious that much is done for the protection of the lunatic, but there is no graduation of restriction; all found of unsound mind are equally interdicted, though they might go about with impunity, or when their unsoundness of mind was perfectly harmless. I would, with great humility, call your Lordship's attention to the clause in the French code, which might, after the consideration of the law officers of the Crown, be modified so as to lessen the extreme penalty of unsoundness of mind, confinement in a lunatic asylum for a series of desolate years. The clause is this:—'On rejecting a demand for interdiction, the tribunal may, nevertheless, if circumstances require it, order that the defendant shall not hereafter plead, compromise, borrow, receive personal property, purchase, or give receipts, alienate or mortgage his property, without the assistance of a counsel, who shall be appointed at the same time.' This clause has been found to work well in France."

Dr. Seymour, in the course of his comprehensive *brochure*, remarks that on the proximate causes of insanity little advance has been made for the last twenty-five years, which, however, arises from the very nature of the inquiry, guarded, as it is, by the fears of all those related to the patient, who would be glad, if possible, to bury the past itself in oblivion; all, high and low, shrinking from acknowledging that insanity exists in any member of a family. In fact, as Dr. Seymour well and truly remarks, "there is no asseveration too strong, no trick too great to hide, even from the medical adviser, that others in the family beside the patient have experienced this calamity."

The author appeals strongly and earnestly for the establishment of licensed institutions for the reception of those of reduced pecuniary means, the subject of mental disease, who were accustomed to the comforts and refinements of their own homes; but who, prostrated by insanity, are shut out both from private and public asylums, the former from their great expense, the latter from their being for "paupers" alone—and even were this otherwise, there would be, as Dr. Seymour most properly observes, "no small cruelty in mixing together persons of such different grades, and accustomed to such different treatment in health." The want of such intermediate institutions is a clamant evil, and should most unquestionably be remedied without delay, and that, too, by the Government of the country, whose bounden duty it is to do so; the attempts in this way on the part of private individuals having signally failed. In conclusion, we think Dr. Seymour has done excellent service by this emanation from his able and philanthropic pen, and we sincerely desire to see his humane suggestions carried into practice, and that, too, without any further loss of valuable time.

14. The "Tables for the Diagnosis of Diseases of the Brain," by Dr. J. Russell Reynolds, we consider well calculated to accomplish what their author designed—namely, that "by their aid the student might make approximative diagnosis where otherwise he might be lost in mystery or confusion, and thus assist him to lay the basis of a more valuable, because self-acquired, information." The Tables in question are divided into four large groups—namely:—

I. The acute febrile diseases, containing simple meningitis (with premonitory symptoms, general disturbance, mental changes, sensorial changes, motorial symptoms); tubercular meningitis, rheumatic meningitis; cerebritis, general; cerebritis, partial; continued fever and gastric remittent in children; acute mania.

II. Apoplectic diseases: Congestion, hemorrhage (cerebral, ventricular, arachnoid); softening, or partial cerebritis. Uræmia from "Bright's disease."

III. Acute convulsive diseases.—A. Eccentric: Specific diseases, such as Exanthemata. Irritation, such as dentition, &c.—B. Centric: Dynamic, or idiopathic. Congestion. Softening. Tubercle of brain and tubercular meningitis, assuming convulsive form, especially in the child. Uræmia.

IV. Chronic diseases of mixed character: Nervous disturbance, convulsions depending upon gastric, intestinal, uterine, or other diseases. Hysteria. Epilepsy, simple or uncomplicated. Chronic meningitis (without developed insanity). Tumour. Chronic softening.

15. Before noticing the contents of Dr. Rogan's last Report of the District Hospital for the Insane at Derry, we must refer for a moment to what we stated of that well-conducted establishment in our last Review in respect of its dietary, which was, that "no solid meat was allowed on any day in the week, or at any period of the year, to patients in ordinary, whose dinner meal consisted of 'oxhead soup' and bread on but two days in the week, and of 'vegetable soup' and bread on the other five." Exception was taken to this statement, and our attention called to the dietary, as contained in that printed Report, to show that the Review had underrated the matter. We now very willingly give the dietary table as then and still in use, from which it will be seen that, as regards "solid meat," such is permitted to be indulged in by the Derry inmates, in the shape of "soup," two days in the week only. The dietary of the house, as regards the dinner, is found to be as follows:—

"Dinner. Sundays and Thursdays—Males, 1 quart of soup and 12 ounces of bread; Females, 1 quart of soup and 8 ounces of bread. Tuesdays and Saturdays—Males, 1 quart of ox-head soup and 12 ounces of bread; Females, 1 quart ditto and 8 ounces of bread. Mondays, Wednesdays, and Fridays—Males, 1 quart of vegetable soup and 12 ounces of bread; Females, 1 quart ditto and 8 ounces of bread. N. B.—The soup allowed on Sunday and Thursday is made from 40 lbs. of beef for 100 quarts; and that used on Tuesday and Saturday is made from ox-heads, 1 to 25 quarts. The soup contains oatmeal, rice, peas, and garden vegetables."

Our oversight was not giving credit for the soup on Sundays and Thursdays, which contains about six ounces of beef for each patient—that is, if beef without bone be used, which, however, is not stated—and if not, one-fifth at least should be deducted for bone, so that, after all, this "soup," the representative of "solid meat" in this institution is not so exceedingly generous in its constituents; the "vegetable soup," of course, contains no beef; and as to the "ox-head soup," there is little fear of it over-stimulating the patients with but one ox-head to every twenty-five, each head being considered equivalent to five pounds of meat, or four ounces to each quart. Having made this explanation, we take up the concise and practical Report of Dr. Rogan for the present year, from which we gather that the number of patients admitted during the year was 82; that, of 298 under treatment, 40 were discharged recovered; 30 ditto, more or less improved; 4 not improved; and that 10 had died, leaving at the end of the year 214 in the house, of whom but 24 were considered curable. Water, so essential to the health and comfort of the patients, was still inadequately supplied, and to which serious defect Dr. Rogan called the attention of the authorities in his Report last year. The year's expenditure was £4384 15*s.* 11*d.* The sum expended for tobacco alone was £62 18*s.* 5*d.*; and for wine and beer only £19 0*s.* 9*d.* The average expense of each patient was £20 0*s.* 5*d.* No casualty out of the ordinary course occurred during the year amongst the inmates.

16. The Mullingar District Hospital for the Insane Poor includes three counties, viz., those of Longford, Meath, and Westmeath. Its very efficient and zealous Superintendent Physician, Dr. Berkeley, in his fourth Annual Report for the year ended 31st May last, informs us that "at the close of the year ending May 31, 1858, there remained in the institution 100 males and 109 females; total, 209. The number admitted during the year, viz., 37 males, and 35 females = 72, exhi-

bits a falling off of 3 as compared with admissions in the preceding year. The total number under treatment during the year amounted to 281—namely, 137 males, and 144 females; of which there were discharged (recovered and relieved) 21 males, and 15 females; and 15 males, and 6 females (21) were removed by death, leaving 217 in the asylum at the date of this Report." The causes of death are stated to have been:—bronchitis and disease of lungs, 1 (male); congestion of brain, 1 (male); consumption (phthisis?), 1 (female); disease of lungs, 1 (female); dysentery, 2 (1 male, 1 female); effusion of brain, 2 (males); general paralysis, 1 (male); maniacal exhaustion, 3 (males); ditto, with softening of brain, 2 (males); ditto, with diarrhœa, 2 (1 male, 1 female); ditto, with wasting of body, 2 (1 male, 1 female); maniacal debility and epilepsy, 1 (female); paralysis from apoplexy, 1 (male); pneumonia, 1 (male). The expenditure for the year amounted to £4701 2*s.* 1*d.* The daily average cost of each patient, including all charges, is stated to have been 1·1¼. The diet table of this institution is a reasonably substantial one, affording at the dinner meal half a pound of "meat" on four days in the week to each patient, male and female, with half a pound of bread. We presume that the "meat" is served up with vegetables, but its particular method of cooking is not stated in the dietary. The dinner on the remaining three days consists of new milk (1 pint), and bread (ten ounces); and the supper, every day, of bread (8 ounces, males; 6 ounces, females); and cocoa. It is stated in the Report by Dr. Berkeley, that "the works of improvement, in pursuance of the award made by the Treasury," had been brought to a termination, but not a satisfactory one, the building not being in the least improved, and "the walls still as pervious to the wet as before the improving operations commenced." The Mullingar establishment, erected under the Board of Works, being only a few years in operation, it speaks very badly for the oversight exhibited by that department, that the buildings should in the first instance have been so slovenly and badly executed as to require repairs so soon; and in the next, that those so-called repairs should have proved nothing of the kind.

17. According to the Report for the year ending 31st March last, of the Belfast District Hospital for the Insane, there were under treatment during the year 458 patients, of whom 250 were males, and 208 females. The new cases of admission, embraced in the above total, were 114—namely, 57 exactly of each sex. There were discharged during the year, 83—40

males, and 43 females; of those discharged, 65, viz., 33 males, and 32 females, are under the head of "recovered;" and 18, viz., 7 males, and 11 females, under that of "relieved." The deaths were 18—12 males, and 6 females; leaving in the house under treatment at the close of the year, 198 males, and 159 females = 357. Of the 357 remaining, 230 were considered alleged or incurable cases, and 127 "probably curable." The chronic causes of insanity of the 114 new admissions for the year were:—abuse of medicine, 1 (male); apoplexy, 1 (female); bodily ailments, 7 (4 males, and 3 females); disappointed love, 2 (females); epilepsy, 1 (male); excessive study, 1 (male); fright, 5 (3 males, and 2 females); grief, anxiety, &c., 11 (4 males, and 7 females); intemperance, 11 (7 males, and 4 females); puerperal condition, 1, paralysis, 1 (male); religious excitement, 3 (2 males, and 1 female); hereditary, 12 (7 males, and 5 females); unknown, 57 (25 males, and 32 females). The causes of death were:—maniacal exhaustion, 4 (females); paralysis, 3 (females); epilepsy, 2 (males); general debility, 2 (males); phthisis, 2 (1 male, and 1 female); apoplexy, 1 (male); dysentery, 1 (male); suicide by suspension, 1 (female). This amount of mortality was considered exceedingly small, being under 6 per cent. The case of suicide occurred between night and morning, after the deceased had been seen to bed as usual, and in the morning, on her room being entered by the attendant in charge, she was found quite dead, suspended by the neck, by means of the bed-sheet, from the ventilator of the room. There were so many as twenty-five of the admissions of the year suicidally disposed, all requiring the most constant vigilance; and fifteen had a homicidal tendency, and who also occasioned much anxiety to guard the other inmates from their violence. The house throughout the year was overcrowded, and unable to give accommodation to the applications for admission. The expense of maintenance for the year was £6738 18*s.* 2*d.*, making the average annual expense of each patient, all charges included, £19 8*s.* 2*d.* The farm and garden produced a net profit of £304 9*s.* 9*d.*, both being laboured entirely by the inmates, the total number of whom employed at various duties, in-door and out-door, was 274 (179 males, and 95 females). The principal occupations of the males were, farm labour, 80; pumping water, 30; sweeping yards, &c., 20; assisting servants, 12, &c.; and those of the females, spinning, 20; washing, 20; knitting, 16; making and repairing clothing, 14, &c., &c. In the Report is contained a strongly-worded petition to the House of Commons, by the Board of Governors, against the provisions generally of the "Lunatic Poor (Ireland) Bill," then

before the House, but subsequently withdrawn by Lord Naas, the then Chief Secretary of Ireland. The petition earnestly remonstrated, in particular, against the compulsory clause the Bill contained in regard to the appointment of chaplains, observing under that head:—

"That until the year 1854, when chaplains were admitted into the Asylum, in deference to the wish of the Lord Lieutenant of Ireland, this institution stood very considerably in advance of any in Ireland, having chaplains, in its per-centage of cases cured and relieved. During the two years, however, in which chaplains officiated, from the excitement produced by their attendance on the patients, and other causes connected therewith, the per-centage of cases became diminished to the extent of one-third at least; but since the discontinuance of chaplains for the last three years, this institution has recovered its distinguished position in regard to the number of those cured and relieved. Petitioners, therefore, without desiring to interfere with the management of other asylums, most respectfully solicit that in any Bill which may pass your honorable House the appointment of chaplains shall be left exclusively to the discretion of the Board of Governors for the time being: in making which request they are sustained by the repeated and unanimous declarations of the Grand Juries of the three counties with which this Asylum is connected."

Here, then, is cause and effect most palpably manifested in their results, and surely under such circumstances neither the Executive on the one hand, nor the Legislature on the other, both having nothing but the welfare of the insane patient in view, it is to be presumed, will hereafter persevere in advising and forcing, respectively, the appointment of a class of officials which has proved to be absolutely injurious to the patients? Let well alone, we emphatically say, in such a case as this, and whilst we would, and invariably, have strenuously advocated that the inmates of an hospital for the insane should receive the benefit of ministerial comfort, *individually*, in every way they wished and were capable of; so, also, we would equally resist the forced intrusion of official chaplains of several denominations to hold *collective* services in so peculiarly-circumstanced an institution, contrary to the opinion of the local authorities, who alone should be the judges of the prudence, necessity, and advisability of so questionable a good, even in the most apparently favourable circumstances. Nothing, therefore, could have been fairer or more reasonable than the above prayer of the Governors of the Belfast District Hospital for the Insane, and the granting of which could not, with the least show of justice or reason, have been denied by the House of Commons. The

Governors, in this ably drawn-up petition of theirs, call attention also to certain imputations cast upon them, by implication at least, in the conduct of their institution, by the late Royal Commission of Inquiry into the state of the Irish Asylums, in reference to the consumption of food, in which they have clearly demonstrated that that Commission published, in their Report, returns altogether at variance with those supplied to them by the Governors, and on which were founded those gross, but entirely foundationless imputations, thus placing that defunct and most unhappily constituted Commission in a very awkward position before the country at large, and their invidious and one-sided Report, a Blue Book of no weight or reliance as to accuracy of the commonest kind.

18. Dr. Thurnam, in his usually interesting and sensible Report of the Wilts County Hospital for the Pauper Insane, refers to a newly erected building, nearly ready, for the accommodation of 35 additional female inmates, the cost being but £1300, or at the very moderate rate of £37 per head. He refers to an epidemic which had been amongst the patients, namely, "boils and furuncular inflammation" The deaths for the year were 34 (18 males and 16 females), out of an average daily number of 332·5, being upwards of 10 per cent. The causes of death were chiefly those of diseases of the brain and of the lungs, so many as nine coming under the latter head. Two inquests were held during the year; the first on a male patient, aged 61, who died very suddenly of extensive disease of the heart, as proved on a necroscopic examination of the body; the second was that of an imbecile child, aged 9, from her clothes accidentally taking fire during the momentary absence of the attendant. The Committee of Visitors, on investigating this case, reported that "no blame could be attached to any one, nor was the system of having open fires impugned in consequence of the accident, which might have happened in any public or private establishment." Dr. Thurnam regrets, he states, that so many of the inmates under his charge, particularly amongst the men, cannot be interested in the amusements provided for them, which is rather an unusual state of things to find existing. The kinds of amusement practised, with the exception of "open-air tea-parties during the last summer," are not stated; but in our experience we believe that dancing and music will be more than acceptable to the great majority, and that nothing better could be "the order of the evening" for such communities. The number of "recovered" cases during the

year amounted to 49 (24 males, 25 females); of "relieved," to one only (a male). The new admissions for the year were 71 (36 males, 35 females); the readmissions to 23 (9 males, 14 females). The number left under treatment at the close of the year 1858 was 343 (14 males, 197 females). The total payment made during the year amounted to £6715 9*s.* 8*d.* The snuff and tobacco cost £43 14*s.* 11*d.*; the newspapers and periodicals but £3 15*s.* 4*d.*

19. We are not in the habit generally, in our notices of Reports of Asylums, of referring to the "sayings and doings" they may contain of the Committees of Visitors, our duty being rather with the conduct of those institutions by their responsible heads, the Physician-Superintendents; but in respect of the "Pauper Lunatic Asylum for the County and City of Worcester," so pleased have we been with the opening paragraph of the Report of its Committee for the year 1857,—one which is so much to their credit, and equally so to Dr. Sherlock, the Superintendent,—that we feel constrained here to reproduce it:—

"Your Committee have to report their continued approbation and strong commendation of the zeal and attention displayed by Dr. Sherlock in the discharge of his duties. Your Committee have for some time felt that the salary of Dr. Sherlock, £350 a year, was inadequate for the constant labour, responsibility, and confinement of his situation; and have felt bound, as an act of justice, to increase that salary by £50 a year from Michaelmas last."

This is exceedingly to the honour of both the above parties, and now to record it in these pages affords us great pleasure—a pleasure—shall we say?—enhanced from the circumstance of Dr. Sherlock being an Irishman. Lord Shaftesbury, from his long experience of what the onerous duties are of a gentleman in Dr. Sherlock's position, has stated in his examination before the Select Committee of the House of Commons, as we have already brought forward in the course of this Review, that the salaries of the Medical Superintendents of hospitals for the insane should at least be £500 or £600 a year; and now, seeing that the Committee of the Worcester Asylum have been, in a measure, approximating to that excellent nobleman's just views of a fitting standard of payment, we strongly commend the example thus so laudably given to the Committees of the "Mammoth" Asylums for the county of Middlesex at Colney Hatch and Hanwell, in the hope that the consciences of those

liberal gentlemen will be pricked by it, and that they will make "a virtue of necessity" by properly remunerating their overburdened and miserably paid Medical Superintendents.

The state of the Worcester Asylum at the close of the year 1857 (the latest Report with which we have been supplied by Dr. Sherlock) was as follows:—

	M.	F.	T.
Number of patients at close of 1856, . . .	116	135	257
Admitted during 1857, ...	74	56	130
Total under treatment, ...	190	191	381

	M.	F.	T.			
Discharged cured, . . .	18	11	29			
,, relieved, . .	2	0	2			
,, unimproved, .	3	0	3			
Died, ...	10	19	29			
	—	—	—	33	30	63
Remaining under treatment, ...				157	161	318

Of the deaths, 12 occurred from disease affecting the brain and nervous system, and several from the patients coming in in a dying state. The general health of the patients was good throughout the year, and no epidemic of any kind made its appearance. The year's expenditure amounted to £7454 14*s.* 6*d.* We are glad to perceive that tobacco in no form is consumed in this excellently well managed institution under the humane and able superintendence of Dr. Sherlock.

20. The quinquennial Statistical Report of Cases of Insanity treated in Abington Abbey Asylum, and drawn up by Dr. Thomas Prichard, is a document which appears to have been compiled with much care and attention, and will, doubtless, not be without interest to the statistician and others. The author states that he has been desirous of seeing the medical officers and proprietors of private asylums generally, publishing the results of their experience in the treatment of insanity amongst the upper and middle classes of society, but hitherto without success, which, perhaps, is to be regretted. However, though this has not been done by the author's brethren, yet any want in this respect has been in a large measure compensated for by the Commissioners in Lunacy, whose Annual Reports always afford the usual particulars of each private asylum in common with those of the public establishments. We have only space for the annexed table from the Report of the above institution:

	M.	F.	T.
Under treatment January 1, 1854, . . .	14	16	30
Admitted from Jan. 1, 1854, to Dec. 31, '58,	29	29	58
Total number treated, ...	43	45	88
Dismissed, recovered, ...	13	17	30
,, on trial, and who continued well,	2	5	7
,, improved, ...	3	5	8
,, not improved, ...	1	0	1
,, transferred to public asylums, .	2	4	6
,, transferred to private asylums, .	2	1	3
Escaped, ...	0	1	1
Died, ...	2	3	5
Total number dismissed, ...	25	36	61
Remaining, Jan. 1, 1859, ...	18	9	27
Average daily number of patients, ...			28
Average daily number of officers and servants, . .			22

According to the above, it will be observed that 42 per cent. were discharged recovered, and that 5·6 per cent. died—results which, as compared with public asylums, were very successful and satisfactory.

21. Dr. Skae's Report of the Royal Edinburgh Asylum for the year 1858 is drawn up with every mark of that eminent and experienced practitioner's usual ability and completeness. Annexed is a statement of the general results of the year:—

				M.	F.	T.
Number of Inmates at the close of 1857, .				348	291	639
Admitted during the year 1858, ...				118	117	235
Total number treated, ...				466	408	874
Discharged cured, . .	76	82	158			
,, uncured, . . .	29	38	67			
Died, ...	48	26	74			
	—	—	—	124	108	232
Remaining under treatment 31st December, 1858, ...				342	300	642

Three of the admissions came spontaneously to the Asylum, entreating to be taken under treatment, two of whom had formerly been inmates. In regard to the death casualties, 18 (11 males, 7 females) arose from phthisis, 14 (10 males, 4 females)

from general paralysis, 5 (males) from epilepsy, 4 each from dysentery (males) and maniacal exhaustion (3 males, 1 female), 3 each from apoplexy (1 male, 2 females), disease of brain (1 male, 2 females), diarrhœa (1 male, 2 females), and senile decay (males); 2 each from meningitis (1 male, 1 female), bronchitis (1 male, 1 female), morbus cordis (1 male, 1 female), and peritonitis (female); 1 each from cerebral effusion (male), exhaustion after epilepsy (female), empyema (female), pneumonia (male), endocarditis (male), cancer of peritoneum (male), Bright's disease of kidney (male), and erysipelas (male).

The causes of insanity in the admissions of the year were—previous attack, 60 (26 males, 34 females); 35, hereditary tendency (14 males, 21 females); 26, intemperance (16 males, 10 females); 7, anxiety (3 males, 4 females); 6 congenital (5 males, 1 female); and 6 disappointment in love (2 males, 4 females); 5 each, terror (1 male, 4 females); injury of head (4 males, 1 female), and change of life (females); 4 each, losses in business (males), secret vice (3 males, 1 female), and puerperal; 3 each, over-study (1 male, 2 females), and bad health (2 males, 1 female); 2 each, disappointment (males), hot climate (males), and old age (1 male, 1 female); 1 each, grief (male), remorse (female), success (male), prostitution (female), amenorrhœa, over-lactation, and cancer (male). Post-mortem examinations were made in 30 cases of the 84 deaths which occurred during the year, and many interesting facts carefully noted of the several morbid appearances which were thus manifested, a remarkable one being that of "a node-like process projected from the right temporal bone over the superior semicircular canal in a case of monomania of unseen agency." Great industrial activity would appear to be the order of the day in the Edinburgh Asylum, the amount of work of various useful kinds executed by the inmates being very considerable. Nor is there any lack of recreation and amusement, no approved means in these respects being left untried for the restoration and comfort of the patients. Neither is intellectual culture lost sight of, but is amply and judiciously provided for. This institution publishes a monthly periodical, entitled "The Morningside Mirror," which does much credit to its editor (an inmate), and his learned contributors around him. We can recommend it strongly to the notice of our readers as a very unique publication of its interesting kind. The ordinary expenditure of the year amounted to £18,825 5*s.* 9½*d.*, in which we perceive the extraordinarily extravagant sum of £13 12*s.* 2*d.* as "salary" to one of the Assistant Physicians! This munificent remuneration, however, having been already referred to in our review of

the Scotch Commissioners' Report, need not now be further shown up. Seeing no mention of tobacco in the account, we opine that Dr. Skae has banished its pernicious use from amongst his well-cared-for charge.

22. The Aberdeen Asylum, under the continued able superintendence of Dr. Jamieson, is an institution which, in common with all the other Scotch chartered asylums, is of a mixed character,—that is, for the treatment of patients both of the educated and independent, and parochial or pauper classes. The number of private patients it had under treatment during the year 1858 was 111 (49 males, 62 females), and of parochial cases 285 (117 males, 168 females), making together a gross total of 396 inmates (179 males, 217 females). The discharges in recoveries for the year amounted to 39 (13 males, 26 females), ditto, as relieved, to 27 (11 males, 16 females), ditto, unimproved, 25 (12 males, 13 females). The deaths were 15 (5 males, 10 females), leaving under treatment on the last day of December, 1858, 290 patients of both classes (138 males, 152 females). The causes of death were:—Paralysis, 4 (2 males, 2 females); exhaustion and gradual decay, 3 (2 males, 1 female); apoplexy, 2 (1 male, 1 female); ditto, complicated with disease of the heart 2 (females); one each of phthisis (female), disease of brain (female), dropsy (female), and fever (female). Ten of the admissions of the year (3 males, 7 females) were the subjects of suicidal impulse, but happily no casualty in this way occurred during the year, which is one of the matters to be wondered at, and, at the same time, speaks volumes for the great watchfulness which must be practised to prevent so deplorable a calamity. Dr. Jamieson states that an important improvement had been made in the bedding of the parochial cases by substituting hair mattresses generally in place of chaff. For clean patients this is the best possible description of bed, and the most economical in the end, that could be used; but for other classes we believe there is nothing better or more comfortable than a bed of good oat-straw. An extended and improved system of night-watching had also been established during the past year, and the experimental addition of two detached cottages for some of the more orderly class of females of the pauper class put into operation, which we had an opportunity of seeing lately, and which appeared to us an excellent means of providing increased accommodation. Another desideratum in all asylums we found in existence here,—that of an entirely separate residence for the Superintendent Physician, which ought to be the rule in all such institutions for the due

comfort and proper status of its head, and not, as at present is the case in the great majority of them, the Superintendent's scanty accommodation mixed up with that of the matron and other secondary officers,—a domestic state of things totally subversive of all authority and respect, and only too well calculated to prevent any man of the least independence of spirit and respect for himself to undertake the arduous and responsible duties of Superintendent, thus subjecting himself and his family to perpetual discomfort and hourly petty annoyances. Dr. Jamieson states that the "minimum diet" of the pauper class had been slightly improved, "partly in deference to suggestions" on that important head of treatment,—which all Medical Superintendents, as a matter of solemn duty to their charge, should impress on their respective committees of management, namely, the humanity and the real economy of a liberal and substantial scale of diet. We know the difficulties to be contended with in this respect, and how hard it is to convince men determined not to be convinced of the absolute necessity of a good standard dietary for the insane poor. Still the Superintendents should persevere, and not cease their exertions, for their patients being done the fullest justice to in a matter of such primary moment. We regret no table of dietary appears embodied in this otherwise full and complete Report of the Aberdeen Asylum,—a table which, in our opinion, should never be omitted in the annual reports of public hospitals for the insane. We have only left ourselves room to add, that the total expenses of maintenance for the year were £6330 0*s.* 3*d.*, leaving an income above expenditure of £465 5*s.* 11*d.* We do not observe, under the several heads of expenses incurred, any for tobacco, so that we presume and hope Dr. Jamieson does not sanction its use in any form in his very creditably-managed institution.

23. For a number of years past, in these Annual Reviews[a], when noticing the Reports of "James Murray's Royal Asylum for Lunatics, near Perth," we have directed special attention to the extraordinary circumstance of no financial statement being afforded in them to the public by its Board of Directors. The one now before us labours under the same most unaccountable omission, and we are, therefore, again compelled, however reluctantly, to animadvert, in the strongest manner, upon this dereliction of a bounden duty, and candidly to state that we consider the holding back of any official statement of accounts

[a] See the Reviews on Insanity in the November issues of this Journal for 1854, 1855, 1856, 1857, and 1858.—*Rev.*

has a very suspicious appearance, and must be prejudicial to the character of that establishment, notwithstanding the Directors inform us, in their last-issued Report, that "the institution has continued to enjoy the confidence of the public." It is the only chartered asylum, with the exception of the Crichton Institution, that we are aware of, of which the fullest information is not annually rendered of both charge and discharge; and how it happens that this invariable exception to so salutary a custom exists in the Perth and Crichton Asylums, we are entirely at a loss to imagine. Is there no authority in Scotland to appeal to on this head, and have this serious fiscal want remedied? It occurs to us, that the "General Board of Commissioners in Lunacy for Scotland" must have full power to call for a statement of expenditure of income from chartered asylums like these; and we, accordingly, respectfully call the attention of the Commissioners to the point at issue, in the hope that succeeding Reports will not issue from the Perth and Crichton Asylums without a full and clear debtor and creditor account being published in them by their Boards of Directors.

Having discharged our duty in the above matter, we turn to the voluminous and elaborate Report of the Perth Asylum, as written by its zealous Superintendent Physician, Dr. Lauder Lindsay. The general results of the year were as follows:—

	M.	F.	T.
Patients remaining under treatment June, 1858,	84	91	175
Patients admitted during the year, viz., June, 1858, to June, 1859,	37	42	79
Total under treatment during the year,	121	133	254

	M.	F.	T.			
Discharged, recovered,	13	21	34			
Removed, improved,	2	1	3			
„ unimproved,	1	4	5			
Died,	7	4	11			
				23	30	53
Remaining under treatment, June, 1859,				98	103	201

Social Condition of those admitted during the year.

	M.	F.	T.
Married,	12	12	24
Single,	23	22	45
Widows and Widowers,	2	8	10
	37	42	79

Causes of Death.

Apoplexy, simple, ...	0	1	1
,, in course of general paralysis, .	1	0	1
Broncho-pneumonia, acute, double, . . .	1	0	1
,, with acute pleurisy, .	1	0	1
Convulsions in course of general paralysis, .	0	1	1
Dysentery, ...	1	0	1
Pneumonia, double, typhoid, . - . .	1	0	1
Senile exhaustion, ...	2	2	4
	7	4	11

With reference to the term "General Paralysis of the Insane," Dr. Lindsay objects to it as "a mischievous and unscientific one;" and, further, that "he has for several years entertained views on its nature and pathology opposed to those currently received both by alienistes and medical men generally." Now, Dr. Lindsay will pardon us for remarking, that he is still young in harness in the specialty upon which he has entered, we admit, with such commendable zeal, and has brought so much talent to bear, and, being so, it strikes us as rather premature, and not quite in good taste, for him thus to put himself so decidedly in opposition to the views of many eminent men holding a contrary opinion to himself on this subject; we say this in the most friendly spirit, and without endorsing either side of the question stated to be in dispute. We would also, we are free to confess, be much better pleased were the Report before us a little less high-sounding and diffuse than it is. We fear there is too much of a showing-off of the Perth Institution, which would be well to modify a little for the future, and tell better with the profession. Dr. Lindsay, we perceive, states, in regard to water-closets in hospitals for the insane, that no system of self-acting flushing, however ingenious, is permanently satisfactory; and that no plan for cleansing "is so efficient and inexpensive, ultimately, as frequent periodical flushing by attendants." Now, in this most important point of domestic detail, comfort, and common cleanliness, we must altogether differ from Dr. Lindsay. We have had opportunities of seeing both systems in use, and we can truly affirm that a more disgusting or beastly one than that of "flushing by attendants" we never experienced; a Scotch system, we believe, which was introduced into our hospitals for the insane in Ireland by the Board of Works, but had ultimately to be banished as abominable, and the self-acting system substituted, which has answered admirably.

24. In our Eighth Annual Review we had on our list of notices the Seventeenth Report of the Crichton Asylum at Dumfries, which, we had supposed, would have been the last one issued with the name of Dr. Browne appended as its chief officer. We find, however, that we were premature in this, inasmuch as the Eighteenth of that institution, that for the year ending November, 1857, is now before us, and signed by that gentleman, as its Resident Physician, but since elevated to the office of one of the Commissioners in Lunacy in Scotland, an elevation which, we need not here again repeat, his deserts so eminently entitled him to, and which, we trust, he will be long spared to enjoy, both on his own account, individually, and for the advantage of the Commission which has obtained the benefit of his matured and generally acknowledged experience in all that relates to the welfare of the insane, as well in theory as in practice. Dr. Browne, referring to his intended secession from the government of the Crichton Asylum, thus feelingly and eloquently expresses himself:—

"Where such ties have long existed,—where there have been boundless trust upon the one side and sincere pity upon the other, it would be unnatural were the connexion broken without deep and lasting regret,—without an earnest desire that the separation should neither be final nor total, and that there may be granted by the God of light and reason greater capacity for amelioration, more gifted instruments, to carry out the designs of Providence."

And, speaking of his successor, Dr. Gilchrist, formerly his Medical Assistant, he says :—

"He brings to the discharge of his duties—so onerous as to require more than human aid—a highly cultivated mind, varied acquirements, inflexible probity and faithfulness, an ardent attachment to the department of medicine in which he is engaged, and, that highest qualification, a love and sympathy for those who are to be the objects of his personal as well as of his professional solicitude, whose destinies, whose immortal souls, may be said to be in his keeping—

"For you must love him, ere to you
He will seem worthy of your love."

With such a testimonial as the above, and from so highly qualified and distinguished a source as its writer, Dr. Gilchrist may, indeed, feel proud, on the one hand, and the authorities of the Crichton Institution rejoice on the other, that Dr. Browne's mantle has fallen upon so worthy a successor.

Dr. Browne's Eighteenth and final Report, we need scarcely say, is fully equal to those which preceded it for valuable and

interesting information. We are now able to afford room merely to state that the patients under treatment in 1857 amounted to 384, of whom were discharged, recovered, 40; ditto, improved, 15; died, 24 = 79, leaving under treatment, at the end of 1857, 305 inmates. The causes of death were, phthisis, 6 (2 males, and 4 females); paralysis and pneumonia, each, 2 (2 males, and 2 females); epilepsy, 1 (male); general paralysis, 1 (male); gastric fever, 1 (male); erysipelas, 1 (female); diseased heart, 1 (female); marasmus, 1 (male); enteritis, 1 (male); disease of bones of skull, 1 (female); alcoholismus chronicus, 1 (male); apoplexy, 1 (male); ascites, 1 (male); bronchitis, 1 (male); broncho-pneumonia, 1 (male); cynanche anginosa, 1 (female). Before concluding with this, the Eighteenth Report of the Crichton Institution, we must not omit to remark that, in common with the Perth Asylum, it publishes no report of expenditure, which we consider a grave omission on the part of its Directors, and that we trust, for the future, this necessary information will not be withheld from the public.

25. Dr. Kirkbride's Report of the Pennsylvania Hospital for the Insane for the year 1858 informs us, that at the end of the year 1857 there remained in hospital 230 patients; since which 131 had been admitted, and 131 discharged or died, leaving 230 under treatment at the close, as there were at the commencement of the year. The total number of inmates in the hospital during the year was 361, and the average number during the whole year was 238. Of the patients discharged during the year 1858, were—cured, 63; much improved, 12; improved, 29; stationary, 9; died, 18: total, 131. As to the causes of death—2 were from acute mania, 3 from gradual exhaustion, 3 from softening of the brain, 2 from phthisis, 2 from epilepsy, 2 from purpura; 1 each from convulsions, dysentery, diarrhœa, old age, and scirrhus. Dr. Kirkbride complains of the premature removal of six patients, on the part of their friends, during the year; than which nothing could tell more against the chances of their ultimate recovery. This is an evil experienced on this side of the Atlantic as well as in America. In some excellent observations on nomenclature as applied to insanity, Dr. Kirkbride condemns strongly the use of the term "cells," "lunatic asylums," and such like prison and most objectionable as well as ignorant terms; and very properly observes that the word "asylum"—as upheld in our own country, and even by the Association of Medical Officers of Hospitals for the Insane, at which we have been always surprised, and always considered very inconisstent—literally meaning a place

of refuge or security, is not provided for the treatment of fever, or rheumatism, or other diseases, and that, accordingly, the institutions for the treatment of insanity should not thus be so improperly and unscientifically designated. Dr. Kirkbride has much more on this head, which we would gladly copy into these pages, did space permit; and with this absolutely necessary brief notice of his excellent and very practical Report, we must now close this already too extended Review.

The Diseases of the Stomach; with an Introduction on its Anatomy, and Physiology. Being Lectures delivered at St. Thomas' Hospital by William Brinton, M.D., F.R.C.P., Lecturer on Physiology and on Forensic Medicine in St. Thomas' Hospital; Physician to the Royal Free Hospital. London: J. Churchill. Post 8vo, pp. 400.

The death of a near relative, fifteen years ago, painfully impressed Dr. Brinton with the obscurity and uncertainty which peculiarly attach to the maladies of the abdominal viscera. From that time, he tells us, he has given to those maladies whatever attention could be justifiably devoted to a special group of diseases by a student and practitioner of physic in general. That the labour thus expended by Dr. Brinton has not been fruitless has, long before the appearance of this volume, been fully evidenced, not only by the admirable article on the stomach and intestines, contributed by Dr. Brinton to the Cyclopædia of Anatomy and Physiology, but also by the able monograph on "Ulcer of the Stomach," reviewed at length in the twenty-third volume of our present series. And, in addition to the work we are about to introduce to our readers, we laid before them, in our last Number, a communication detailing a series of experiments, which will be found to elucidate in no small degree one of the most obscure and difficult problems in the physiology of digestion.

The present volume contains five lectures delivered to an audience consisting of the more advanced students of St. Thomas' Hospital, who, having attended the clinical and systematic lectures on medicine of his colleagues in the hospital, had already, the author believed, an elementary acquaintance with the subject. The lectures thus delivered have received some additions and corrections, we are told in the preface, in passing through the press, and have been increased in number by one (Lecture V.), which was read as a paper before the Physical Society of St. Thomas' Hospital. And, for the convenience of

the reader, a summary of the anatomy and physiology of the stomach has been prefixed.

Coming thus under our notice, we intend to review this work in a two-fold aspect:—First, as a system of lectures of a peculiar description, and in connexion therewith we shall venture to lay before our readers some thoughts that have long been forcing themselves on us, as to the value and appropriateness of lectures as a means of educating students in medicine; and, secondly, we shall have to notice the lectures themselves, as essays on the subjects of which they treat, in which respect they cannot fail to add to the high reputation already attained by the author.

It is obvious, from recent events, that those who have the control of the education of medical students are beginning to find that the system of enforcing attendances on lectures has been carried too far. Some of the licensing bodies have accordingly reduced the number of lectures that they require candidates for their diplomas to attend. We believe this to be a move in the right direction; we only fear that the many opposing influences such a reform must encounter will prevent its being carried to the extent that the altered circumstances of the present age seem to us to require, and we are anxious to direct the attention of our readers to the subject, that an enlightened opinion may assist and regulate the movement.

To illustrate more fully our meaning, we will go somewhat into detail, and we do this the more readily, as it will the better enable us to explain what we conceive to be the characteristic peculiarity of these lectures, to which we have already alluded.

Teaching may be of two kinds; following Dr. Whewell, who has well discussed this subject in his "Principles of English University Education," we may call these "speculative" and "practical." Each of these methods has its peculiar advantage: in the speculative the lecturer expounds to his audience the doctrines or results of some branch of knowledge, the speculations of antecedent philosophers or his own, while the office of the audience is but to attend to him,—to listen, to receive, think on, and treasure up what the speaker delivers, —without being called on to take any active part, without being required to produce, to test, or to apply the knowledge thus acquired. In the other mode of teaching, the learner has not merely to listen, but to do something himself,—not merely to receive, but to produce his knowledge,—in fact, in this system the pupil is required to study and prepare a certain previously assigned subject, and to produce his knowledge, that any errors or misapprehensions he may have fallen into may

be corrected, and that his application and progress may be tested.

It is evident that, for the acquisition of elementary knowledge, the practical system presents great and peculiar advantages over the speculative; while, on the other hand, the speculative is best fitted for teaching the advanced student to reason, and duly weigh and estimate the value and relationship of the facts he has acquired by the other system. Now an objection to the system of teaching by lectures is, that it partakes too exclusively of the nature of the speculative teaching and not sufficiently of the practical. To this, we believe, it is mainly to be attributed that students do not attend to the courses of lectures that are prescribed for them, and that they shun the lecture theatre to attend the class-room of the private teacher,—the result being that, while both modes of teaching have their peculiar advantages, neither is fully developed. For this result our licensing bodies are chiefly to blame, for if, instead of enforcing attendance on certain courses of lectures, they would make their examinations more searching, and test the acquirements of their pupils at short and frequent intervals, allowing them to obtain their information where and how they pleased, each mode of teaching would develop its own merits; and, instead of being opposed to one another, as is too much the case at present, would co-operate in obtaining for the student a greatly improved education.

No doubt, under such a free system, much of the lecturing of the present day would have to be given up; but this, we cannot conceal from ourselves, would be but a small loss, for we feel convinced that, however well suited the lecture-room may have been formerly for conveying instruction, it has, like many other time-honoured institutions, been superseded by the printing press. Now, when books are so cheap, and diagrams and illustrations are so well executed, lecturing is little wanted, the permanency of a printed book, and the facilities it presents for re-perusal and reference, giving it advantages that the lecturer cannot compete with.

At the same time, for many of the higher branches of knowledge, and for subjects requiring demonstrations, the efficient lecturer must be always sure of an audience. There is an influence in the living voice, and an advantage in coming face to face with the living teacher, that places the lecturer far above the competition of books; but teaching of this kind must be of a high description,—the audience must be led to examine, to reflect; the lecturer must show that he is able to lead them in this path; he must, moreover, have something to communicate,

and such lecturing will command an audience. It was such lecturing that drew the crowded audiences which attended the course delivered a few months ago, in this city, by Dr. Brown-Séquard, where the most senior and busy practitioners were seen vying with the student in the attention they bestowed.

Yet even in such a course as that delivered by Brown-Séquard, a radical defect in lecturing, as a system of education, manifested itself. Notwithstanding that the audience were, for the most part, men of trained minds, who were familiar with the bearings of the subjects discussed, and that the chief theories propounded were based on experiments that were exhibited,—yet there was manifested by the conversation of the audience, after the lecture, a degree of uncertainty as to the facts actually demonstrated, and of obscurity as to the theories propounded, that showed the difficulty, in listening to a lecturer, of hearing all that is said, and of duly estimating and retaining all that is heard, and the necessity that even trained minds are under of turning back and retracing their steps, in proportion as the subject developes itself, opportunity for which can only be afforded by a book.

Let us not be misapprehended. We do not mean to decry lectures as useless, but we do assert that, for many purposes, lecturing is a bad system of teaching. For the acquisition of elementary facts, where the student has chiefly to exercise his memory, and to keep his attention fixed, we believe lectures to be about the worst system that could be devised; but when the facts have been acquired, and when it is wished to teach the student to weigh them, to reason on them, and to estimate their value, we believe there is no system so efficient as good lecturing, especially where the lecturer makes use of a text-book, and follows it in his remarks.

Lecturing of this description has been happily compared by a recent writer to the charge which a judge delivers to a jury, after they have heard the evidence in the case which they are engaged in trying:—"The jury already know the details of the case; they have heard the evidence bearing upon it, and they have formed certain conclusions in regard to it. The judge addresses them accordingly: his object is to assist them in arriving at a sound conclusion, and finding a true verdict; and, with a view to this, he merely recapitulates the leading particulars of the case, dwelling only on those which it is specially important for them to bear in mind; and he then proceeds to sift and weigh the evidence adduced, and likewise to apply the facts as they truly appear, together with the principles or the express enactments of the law, to the questions

which the jury have to decide; but he discards a minute detail of the whole case, as being what the jury are already familiar with."

We now leave the consideration of this subject, hoping that its importance at the present conjuncture of medical affairs will sufficiently account for our having dwelt so long on it, remarking that the present lectures of Dr. Brinton are very much of the exegetic character above described, and that this is the peculiar characteristic, of which we spoke at the commencement of our remarks on this subject: they were delivered to an audience who had already acquired the elementary facts; but, however attentive the audience may have been, and however able to follow the reasoning of the lecturer, we are sure they will all be glad to see the lectures in print, not only that they may be able to refer to them from time to time, but because Dr. Brinton has evidently added so much to them as to make them very considerable essays on the subjects treated of, rather than mere lectures that might be delivered in an hour. We must, however, observe that the very fact of this extension being necessary, proves that the information conveyed in lectures, even when delivered like these, under most favourable circumstances, is necessarily incomplete, and more or less superficial in its character. Dr. Brown-Séquard seems to have felt the same want of extension, and in publishing the lectures he delivered before the College of Surgeons, expanded the six into twelve, "covering just the same ground."

Having thus indicated some of the thoughts suggested to us by the form in which these essays have been published, we may now proceed to show the subjects that have been treated of, and some of the conclusions that have been arrived at. As already mentioned, the volume opens with a summary of the author's lectures on the anatomy and physiology of the stomach. To those who have not time or opportunity to read his more extended account in the Cyclopædia, this will afford a valuable resumè of all the recent discoveries and of the doctrines of the present day; but we see nothing sufficiently novel in it to require that we should dwell on it here.

Lecture I. is devoted to the consideration of the symptoms of gastric disease generally, including pain, eructation, regurgitation, vomiting, hemorrhage, and flatulence. The nature and varieties of these are fully discussed; the mode of their production is inquired into; and the inferences to be deduced from them are indicated. In this way a series of principles is laid down, the application of which enables the lecturer to abbreviate considerably his remarks on the diseases of which he

afterwards treats, and the lecture is well calculated to lead to the philosophical consideration and scientific treatment of stomach diseases. The remarks on vomiting may be taken as a fair sample of this. Having shown the mechanism by which vomiting is produced, Dr. Brinton proceeds:—

"As regards the *cause* of vomiting, it is obvious that so complex and co-ordinate an act of various organs can only be accomplished through the intervention of that cerebro-spinal centre from which the nerves of these organs radiate. And hence we may distinguish these causes into two classes;—one in which the irritation provoking the act originates at the nervous centre; and one in which, arising at the periphery, it is transmitted thence to the centre to be reflected into various organs which effect the expulsive process. The first class is illustrated by the vomiting of cerebral injury or disease, as well as by the vomiting sometimes resulting from mental emotion: the second, not only by that ordinary form of vomiting which is excited by a direct irritation of the stomach itself, but by the numerous cases in which it follows an irritation of kindred or even dissimilar textures—such as irritation of the fauces, intestines, or peritoneum; disgusting sights, sounds, or smells; prolonged immersion in cold water; and even wounds of the extremities.

"But even in the second of these classes the act of vomiting can only be regarded as 'reflex' with two important qualifications. Firstly, there are good grounds for believing that a large number of emetic substances are not only quite as active when injected directly into the blood as when merely introduced into the stomach, but that, as shown by Magendie's celebrated experiment (in which tartar-emetic injected into the blood of a dog caused copious vomiting from a bladder which had been substituted for the stomach), whatever their local action on the stomach in the latter of these two cases, it is to a direct influence on the nervous centre that the act of vomiting must chiefly be referred. And, secondly, though, in those numerous cases where the exciting cause is a mechanical irritation, the phenomena of vomiting sufficiently indicate the medulla oblongata to be that segment of the cerebro-spinal centre in which reflection towards the periphery occurs, still the ensuing movement is by no means a simple reflex act. On the contrary, it is effected by the concurrent action of so many organs, and with such characteristic and definite changes in their ordinary times, modes, and degrees of activity—the whole process is so complex, and so truly co-ordinate—that, far from limiting our attention to the reflected course which its exciting cause sometimes takes, we ought rather to regard this as quite a subordinate feature, and the act of vomiting as an involuntary or physical nervous action of the highest order.

"Such a view of the nature of vomiting receives a remarkable illustration from an experiment of mine on the action of tartar-emetic, which conclusively shows what we may almost specify as

an object, a purpose, or at any rate a function, of this complex process. On injecting a solution of tartar-emetic into the superficial femoral vein of a dog, the mineral was found ten minutes after in the fluid contents of the stomach, and in a state of concentration much exceeding that in which it must have been mingled with the mass of the blood. In this instance, too, the poison had produced extreme prostration, but no vomiting. Taken in conjunction with Magendie's experiment already alluded to, it proves that the poison may first be secreted by the stomach into its cavity, and then removed from this cavity, by two processes which are essentially independent of each other, and of any local effect of the secreted drug, however aided by it. A similar process of secretion probably obtains in the case of the salts of other metals, as well as in that of various organic poisons:—the concurrence of such a process with the act of vomiting thus rendering the latter an element of the *vis medicatrix Naturæ*—an act by which the organism throws out a deadly poison like antimony, perhaps even a dangerous disease like fever."

This latter fact, that poisons introduced into the blood and causing vomiting by their influence on the nervous centres, are at the same time eliminated by the stomach, and thus placed so that they may be readily removed from the system, is one of great importance, and shows that we might with advantage have more frequent recourse to the exhibition of emetics, than has of late been usual, in the treatment of many diseases.

There are few questions in practice of more importance, or attended with greater difficulty in some cases, than those that arise as to the cause of vomiting. This is well set forth in the following passage, which enforces the necessity of our looking to the aggregate of the symptoms in forming our diagnosis as to the cause of vomiting in any given case. We would add to what our author says as to the difficulties of the diagnosis, that even the expulsion of food that had been eaten some days previously is not to be relied on as deciding the gastric origin of the vomiting:—

"In alluding to vomiting as a symptom of gastric disturbance, we must begin by conceding, that cases sometimes occur, in which the vital powers are rapidly exhausted by violent and frequent vomiting, that defies all our efforts to relieve or arrest it; and in which our complete uncertainty as to the cause of this vomiting during the life of the patient is little affected by a necropsy, showing no apparent lesion in the stomach, or even (it is said) in any organ of the body. We cannot therefore augur the gastric origin of vomiting from its mere severity and frequency: nay, more, we must not expect that single peculiarity of this symptom—such as its excitement by food, its assocation with epigastric pain, or even its expelling blood—will often suffice to decide its reference to the stomach."

Hemorrhage is the next symptom considered: under this head we expected to have found some account of the "green vomit," which must now be regarded as modified blood; but, though the other forms of hemorrhage are fully discussed, there is no allusion to it.

Flatulence comes next to be considered, and is stated to have its origin in three modes:—First, in the swallowing of air, either voluntary, as in the act of deglutition or eructation, or in mechanical adhesions to the bolus of food, or to the saliva. Second, in the decomposition of the food in the alimentary canal, which is believed to be its principal origin. Third, in the decomposition or putrefaction under certain circumstances of the fluids derived from the organism itself.

The evolution of gases in the digestive tube by a process of secretion from the vessels of its walls, as held to take place by many authors, is altogether denied by Dr. Brinton. His reasons for this, however, do not appear to us to be at all conclusive, nor is his objection to the experiment of Magendie sufficient to invalidate the deductions generally drawn from it. Magendie, as is well known, included a portion of empty intestine, in a healthy dog, between ligatures, which was soon followed by its distention with gas. To this it is objected, that the intestine may not have been empty; and as one grain of starch or sugar would yield, by decomposition, sufficient gas to occupy about eight cubic inches, no such experiment can exclude the presence of sufficient food to account for the gases of the resulting distention. At all events there can be no doubt that, in the *majority of cases*, flatulence arises from the ingestion either, first, of a quantity of food which is too large, absolutely or relatively, to the digestive juices of the individual; or, second, of a quality of food which, either from nascent or existing putrefaction, or from a peculiar proneness to it, or even from a peculiar composition, favours the generation of gases. And it must be admitted that most cases of apparent secretion of gas may be fairly explained by the following principles:—

"The pathological import of flatulence is, however, by no means summed up in these general statements. And the diseases of the stomach and bowels offer us certain phenomena, by which we are in some sense bound to test the conclusions we have come to against the alleged secretion of gases from the gastric or intestinal blood. Not only are there various abnormal states of the digestive canal, in which flatulence occurs under circumstances at first sight suggestive of no very close relation to the above laws; but we occasionally meet with cases, in which this symptom appears and disappears

with such startling rapidity, and seems so completely independent of every other abnormal condition, that it is no wonder if a superficial observer or lax reasoner should think the secretion of gases an absolutely unavoidable explanation. A person, for example, is prevailed upon to break a fast of many hours with a morsel of some kind of food which he habitually digests with difficulty. He is instantly seized with acute pain in the epigastrium; but, before his alarm and agony can obtain any medical relief, is restored to complete health by a copious eructation of flatus. The advocates of this secretory doctrine would perhaps, think such a case susceptible of only one explanation: that the empty stomach had been the seat of a sudden and copious evolution of gas, producing distention and pain, which ended by the expulsion of the *flatus*.

"But there is no necessity for accepting any such explanation. On the contrary, the physiology of the digestive canal not only justifies, but demands, a very different interpretation of the facts.

"To begin at the beginning, let me remind you that the bulk of an aeriform fluid is dictated by the pressure to which it is exposed: so that, for example, to double the pressure of a cubic inch of gas would diminish its bulk to one half; or, conversely, to halve its pressure would convert one cubic inch of bulk into two.

"Now within certain limits (dictated chiefly by the general pressure of the atmosphere), the intestinal gases are exposed to the influence of two varieties of pressure; which, while they seem chiefly or exclusively to affect the bulk occupied by a given amount of *flatus*, often probably concur with a slower alteration in the quantity developed in the digestive canal. The pressure of the abdominal muscles on the intestinal canal, and that of the muscular parietes of this tube on its contents, thus to a great extent regulate the bulk of the aeriform fluids by which it is so largely occupied. It is chiefly by diminished pressure that the most characteristic effects are produced. And their pathological significance depends mainly on the mechanism of this diminution; namely, a muscular relaxation in answer to a stimulus. Thus, when we irritate the peritoneal coat of the intestine in a living animal, we excite a local relaxation (a kind of bulla, or bulging) of the wall of the canal:—a swelling formed by the relaxed coats of the bowel, and occupied by its gaseous contents. In the experiment of Magendie alluded to, it is probably the distention observed was partly due to a more general effect of this kind, brought about by the irritation of the ligature. And it would be easy to adduce a variety of morbid conditions of the alimentary canal to illustrate the propositions:—that relaxation of this kind is connected rather with irritation of the peritoneal, than of the mucous coat; of the trunks, rather than the periphery of nerves: and that (*cæteris paribus*) its degree and extent vary with that of the irritation; so that (as exemplified by severe peritonitis), in its more characteristic forms, it engages, not only the muscular wall of the intestine, but those muscles of the belly which we have seen to be really co-ordinate with it, and thus pro-

duces that general gaseous distention of the flaccid (and, so to speak, paralyzed) abdomen, which constitutes some forms of tympanitis.

"It is scarcely necessary to insist upon the essential distinctions between the more characteristic forms of tympanites and flatulence; between a merely increased bulk and a really increased amount of *flatus;* between that which is not, and that which is, expelled by the contractile force of these two muscular tissues that enclose the contents of the bowel. But there can be little doubt that, in many cases regarded as mere flatulence, it is impossible to exclude that reflex process of relaxation in answer to stimulus, of which the tympanites of peritoneal inflammation affords the best illustration. Especially is this the case with those temporary and local accumulations of *flatus* of which we are considering an example. Here, for instance, instead of a sudden secretion of gas, causing pain and distention of the stomach, and ending in an expulsive act, I should offer a very different explanation:—that the irritation of the morsel of unwholesome food caused a relaxation of the gastric coats; that the pylorus (generally patulous to the non-alimentary contents of the duodenum, and specially so in virtue of this relaxation) allowed the rarefied gases of the stomach to be increased by an addition from the duodenum; and that the resulting eructation expelled a fraction of the total gaseous mass. That, under these circumstances, expulsive contraction should follow relaxation, is not surprising; indeed, you will recollect that, in the normal rhythmic peristalsis of the muscular wall of this canal, these two states have exactly the same sequence, both in time and place.

"You will observe, however, that such a view, which rests, not only on its own inherent probability, but also on that disproof of the secretion of gas by the digestive tube which we have established, suggests considerable doubt as to how far the pain is caused by the flatulence. And a careful analysis of the incidents of such a case will quite confirm this doubt. Without going so far as to assert that distention does not often materially add to the pain of a flatulent attack, we are at least fully entitled to conclude, that (far from pain being always preceded and caused by flatulence) in this chain of abnormal phenomena, pain, relaxation, and contraction or expulsion, are generally three successive links; and that not only may the first occur, without always or necessarily calling forth the second and third, but that it is essentially the exponent of an irritation, itself the cause of all three."

Lecture II. is on the circumstances connected with the examination of the stomach after death, and on gastritis. It is well worthy of perusal, as examining, in a philosophical manner, the circumstances which so frequently lead to error in our examinations of the stomach. Acute gastritis, as an idiopathic affection, Dr. Brinton believes, never occurs,—a conclusion in which we cannot fully coincide in the face of the cases recorded by Andral, Stokes, and others. The sub-acute varieties of the

inflammatory process are believed to affect the stomach very frequently, and are distinguished into two forms: one, in which the malady is caused by a constitutional state, the effects of which are shown in a variety of other organs, as well as in the stomach, is well illustrated by the gastric inflammation which attends many exanthemata. The other is due to causes connected chiefly or exclusively with the stomach itself, which is submitted to an irritative process, somewhat analogous to that typified by the gastritis of irritant poisoning. This form is most frequently seen in that species of delirium tremens occurring after a single long debauch, and generally associated with a thickly coated tongue, and with an amount of vomiting, pain, and tenderness in the epigastrium, indicative of gastric inflammation.

The observations of Dr. Beaumont are regarded by Dr. Brinton as leading to the inference that much of the dyspepsia met with in practice depends on some form of chronic gastritis, a conclusion confirmed, in many cases, by a consideration of the causes that produce the disease; but he cautions us, that we are scarcely entitled to any definite or general conclusion of this kind, especially as it will be found that some varieties of the malady claim a different origin.

Lecture III. is on *Ulcer of the Stomach;* it occupies exactly one quarter of the entire work, and is very nearly a transcript of Dr. Brinton's former volume on the same subject, which we reviewed at length at the time of its publication. To call it a lecture is absurd, and we cannot but regret, for the sake of Dr. Brinton's reputation, that he should have added it to the present volume. We have compared the two essays pretty closely, and, except a changed arrangement of the several sections, and some verbal alterations, we find no real difference; the new arrangement is simpler, and, so far, better than the old; but we can well imagine that the purchasers of both volumes will feel some *soreness* when they find fully a quarter of the new purchase but a reprint of the book they already possess.

Lecture IV. is on *Cancer of the Stomach*, and is one of the best essays on the subject we have, we believe, ever read. It treats the subject in the same way as that on ulcer,—that is, instead of dividing the disease into stages, and giving an elementary, clinical, or systematic history of the disease, a typical case is sketched, and then the several symptoms are taken up *seriatim*, and fully examined in all their bearings. Any attempt to analyze this essay in the space at present at our disposal would be futile; we can only recommend our readers to peruse the work for themselves.

The remaining lectures are, one on cirrhosis and some other rare affections of the stomach, and one on that fruitful subject, dyspepsia.

In our notice of Dr. Brinton's monograph of Ulcer of the Stomach, we gave, as a reason for the length to which our remarks had run, that it lessened, by one affection at least, "the wide field for speculation, conjecture, and empiricism," said by Dr. Abercrombie to be presented by diseases of the stomach; and we have now to tender him our thanks for having performed the same good office for the others, and to offer the same apology to our readers.

A Treatise on Human Physiology; designed for the use of Students and Practitioners of Medicine. By JOHN C. DALTON, Jun., M. D., Professor of Physiology and Microscopic Anatomy in the College of Physicians and Surgeons, New York, &c., &c. Philadelphia: Blanchard and Lea, 1859. Large 8vo, pp. 608.

THE unexampled rapidity made by Physiology within the last century is truly astonishing, and many of those phenomena that to the first labourers in this fascinating science appeared to be clothed with an obscurity absolutely impossible to illumine by any explanation that could be offered, at all in accordance with reason and truth, are now gradually acquiring such a definite outline of shape and consistence as to render what was once unintelligible and completely obscure capable of being comprehended and appreciated by even the most ordinary capacity. It would appear as if the love of the marvellous must always act as the most powerful incentive on the eager curiosity of mankind, and those various and unexpected revelations which must be continually springing up while engaged at a favourite pursuit would seem to be a quite sufficient compensation for any labour already expended, and prove a continued stimulus to urge to still further exertions.

The earlier votaries in this expansive field of inquiry had necessarily manifold serious difficulties to encounter and overcome while endeavouring to elucidate a subject so novel in its character, and endued with ramifications so extensive, and hitherto undefined. The very prejudices of mankind were arrayed against them with an uncompromising zeal, and every attempt to pry into the secrets of nature in order to acquire a fuller insight into the machinery of her operations was regarded as a species of impiety, and as such treated with the most undis-

guised abhorrence; for the spirit of the age was totally opposed to such abstruse speculation, owing to the low ebb of literature that prevailed at that period; and more than one instance is unhappily on record, showing too distinctly that not only was passive resistance alone offered to investigations of this description, but the hand of power was recklessly employed to crush without remorse the instinctive yearnings of the intellect that dared to transgress those limits which ignorance and superstitious awe had assigned as the boundary, to which it was presumed that every legitimate aspiration should be most strictly confined.

The experience, however, of all times has most unequivocally shown that it is absolutely impossible to check or control that spirit of inquiry which would appear to be an innate property of man; a principle implanted in his constitution for the wisest of all purposes at the moment of his birth, and increasing in its intensity with advancing years; accordingly, it will be found that human prohibitions have been always made, only to be evaded or openly set at defiance; in fact, they simply become the incentive to additional exertions to the mind panting for further information on the forbidden topic, which it considers to be a subject fairly open to legitimate investigation. And what could more emphatically lay claim to such a consideration than the moving image that was so continually encountering his view, endowed with functions so wonderful and various in their nature, but all subservient to the one great principle, life; constituting, in fact, a mechanism that owes its existence to causes apparently so inexplicable, that was fed, nourished, and grew under a combination of circumstances still but imperfectly understood, and that ultimately attained its full measure of maturity and vigour only again to lapse gradually into decay, and finally to succumb to that inevitable fate which must be so surely the destiny of every living thing.

It would constitute, perhaps, a subject of no common interest could we view, as if through some retrospective medium, the continuous struggles that must have marked the career of the man of those primæval times, occupied in the noble attempt to unravel the complicated meshes of this mysterious subject. What must have been the condition of his ardent mind, incessantly incited to fresh activity by a clearer knowledge of the various objects which momentarily started up before his excited imagination in the course of his inquiries, not one of which was as yet clearly understood, or its relations to the animal economy even remotely conjectured; with no single starting-point definitely laid down which might serve as a clue to guide him towards the path he was toiling to discover! All must have

been darkness, impenetrable and profound; the living chaos presenting a series of facts only, plain and apparent enough to the senses, but the causes which governed, directed, and controlled them in their several agencies shrouded in complete obscurity, the more tantalizing because it was obvious, from the effect produced, there must have been some general laws in operation to which all were subservient, and rendered a willing obedience. But with the general dearth of information that prevailed in those earlier periods to which we allude, to attempt to obtain even a glimpse of those principles by which the functions of the human economy were regulated must have proved a labour of no ordinary difficulty. Chemistry, particularly organic, had no existence, while the microscope, which has accomplished so much for the physiologist of the present day, was completely unknown. Compelled to deal in assumptions, generally of a very vague nature indeed, plausible theories were originated, to fall almost immediately beneath the searching and critical examination of the sceptical unbeliever, and ingenuity was taxed in vain in endeavouring to uphold and defend a series of doctrines, which depended solely for their existence on conclusions borrowed from the fertility of the imagination alone. There was, in fact, a neglect, or, more strictly speaking, an utter want of first principles, which might serve as the foundation stone for the formation of a superstructure so wide in its outline, and ample in its details, as the subject of animal physiology must necessarily be, if it was expected successfully to combat and withstand the numerous assaults with which it was sure to be assailed; for in investigations of this description, the very groundwork of which must at first be so difficult of comprehension even by the most enlightened mind, certain data must be in the commencement established before opinions can be hazarded, on which the smallest amount of reliance can possibly be placed; and hence originated that system of experimental physiology which attained so high a pitch of perfection in the hands of several of the continental inquirers, and was so successfully pursued by many of our own countrymen. Here was at length the first legitimate attempt made to arrive at the solution of a complicated problem by an appeal to the senses, and a series of facts was thus discovered, manifest to the eyes of all, which could be either verified or refuted by precisely the same means as those on which their very existence had been at first shown to depend. Many of the mysteries which had hitherto lain buried in an impenetrable obscurity were thus brought gradually into notice, and the revelation of one striking and important fact as necessarily led to the discovery

of another, linked and dove-tailed so closely as they were with each other, rendering it almost impossible to arrive at certain conclusions respecting the one without being insensibly drawn into the examination and attempt at explanation of another.

And now a new science appeared on the stage, one that from its nature was calculated to grapple with and elucidate many of those phenomena that to unassisted observation alone presented results not always perfectly satisfactory. Endued essentially with the power of reducing a whole to its several constituent parts, and arriving at certain fundamental elements by a series of laws, the uniformity of which, when once thoroughly understood, insured for them an universal respect, it conferred an accuracy on all inquiries of this nature, that placed them perfectly beyond the reach of all cavil and contradiction. What we allude to is the study of organic chemistry, which from very slight beginnings has been prosecuted with such untiring zeal and ardour as to have attained one of the highest positions in the sciences of the present day, forming the very key to many of the investigations which, without its aid, could never have been carried out with any prospect of ultimate success. But by its agency, however, those innermost secrets of nature which formerly resisted every effort to acquire an insight into them, constituting, in fact, a sealed book to the understanding, have been latterly unfolded gradually to our admiring gaze, making us acquainted with things that in our circumscribed philosophy we had never previously dreamed of, or even suspected their existence. And now there arose, as the fitting and powerful auxiliary to this branch of science, so zealously prosecuted, a more intimate acquaintance with the powers of the microscope, with all its striking revelations; it naturally conferred a fresh vigour on the subject, and several who were before doubtful on many points, which depended solely on the testimony of the organic chemist that they existed at all, were slowly induced to abandon those sceptical views which they had long entertained, and to yield a graceful assent to those doctrines which they had hitherto regarded with an unbelieving eye, and, as such, conscientiously opposed. They saw for themselves, and were convinced, becoming, in fact, the zealous advocates of what they had once ridiculed and treated as purely chimerical; while the novelty of the subject, and the charms with which it was invested, drew into the field a multitude of other inquirers, whose labours, although at first, perhaps, only desultorily directed, were still subservient to the same great purpose,—the elimination of truth; and, the results of their investigations, made at first without any direct object, and the

importance of which they were incapable of appreciating, accidentally attracting the notice of the inquiring physiologist, were, by his giant mind, carefully elaborated, constituting ultimately, perhaps, the nucleus of some novel and imposing theory.

But it was not to the microscope or chemistry only, that mankind was indebted for their progressive knowledge in the science of physiology. The taste for the study of comparative anatomy became very generally diffused, and the information thus obtained by a more intimate acquaintance with the physical organism of the lower classes of creation has succeeded in shedding a revealing light on the structure and functions of many parts, which, observed in man alone, had so repeatedly baffled the object of the inquirer, for it taught him that what was absolutely essential to the vitality of the one might exist in the other, not endued with the same important attributes, but simply as the type; in conformity with those great laws of nature, who would appear to love and admire uniformity even in her most minute and unpretending productions.

In a field of inquiry so vast and extensive, the life-toil of a single individual might have been expended in vain, in the futile effort to constitute what might relatively be termed an appreciable progress. The time, the energy, the talent of multitudes, were required to smooth the road that was beset with so many difficulties, and even although they might have comparatively succeeded in their object, other hands were yet wanting to give form and arrangement to the mass of material which still lay scattered in a confused and discordant heap, without order or connexion. It is, however, fortunate for mankind, that the human mind is endued with such a versatile propensity, that where one can direct his attention to the more laborious occupation of direct experiment, another will be found equally zealous in the task of collecting and methodizing the results of the discoveries of his fellow-labourer, to mould them into a shape not only intelligible, but interesting to the general reader. We hold it to be, in fact, the highest attribute of our race, this rare power with which we are gifted—the tacit appropriation of ideas one from the other, making what was at one moment an individual right, the next the common property of a whole community—the unquestioned heritage of generations yet to come, bequeathed to them, to be rendered yet more valuable and prolific by the exercise of additional labour and mental exertion. And to such, therefore, is virtually due no small degree of real merit, who, apart from every selfish motive of display, are satisfied to sit down and calmly

devote that ability with which they have been endowed to the less imposing task of collecting and bringing together the scattered views of others, reducing them to a uniform shape, scrutinizing with a critical but impartial eye the justice of what has been advanced, blotting out with an unsparing hand what would appear to be contrary to reason and incapable of bearing a strict investigation, impressing what is really useful and instructive, and, what is still more difficult, drawing such rational inferences from them as will have a tendency to promote the propagation of truth and the advancement of legitimate science.

If it were necessary to produce an example of what may be accomplished in this way, we would direct the attention at once to the work at present lying before us, issued from the American press, from the pen of Dr. Dalton. This System of Physiology, both from the excellence of the arrangement studiously observed throughout every page, and the clear, lucid, and instructive manner in which each subject is treated, promises to form one of the most generally received class-books in the English language. It is, in fact, a most admirable epitome of all the really important discoveries that have always been received as incontestible truths, as well as of those which have been recently added to our stock of knowledge on this subject by the labours of the leading microscopists and chemists of the present day, affording a concise but comprehensive view of the progressive steps by which the science has advanced to its present high standard of perfection, having with much wisdom, in our opinion, omitted the great majority of those disputed points, which in the infancy of this subject had crept into the field as great and established facts. In doing so, we conceive that the author has conferred a substantial boon on the student of physiology, as he has thus discarded a mass of material, curious, no doubt, in its nature, but avowedly erroneous, and, as such, worse than useless, for it could only have the effect of burthening the memory, where no positive advantage could be obtained as a compensating equivalent for the time expended in their acquirement. At the same time he has exhibited a most anxious desire to corroborate by actual experiment on his own part every result of importance that has originated from the researches of others, and has taken great pains to avoid introducing any single fact that has not been most cautiously sifted and thoroughly investigated. In all his inferences depending upon the exercise of reason, his deductions are always marked with good sense and careful discrimination; while his arguments in support of particular views are invested with a persuasive power that rarely

fails in carrying his reader along with him in the ideas which he so ably advocates. We will, however, proceed to give a few extracts from the book itself, as a specimen of its style and composition, and this, we conceive, will be quite sufficient to awaken a general interest in a work which is immeasurably superior in its details to the majority of those of the same class to which it belongs.

Speaking of the quantity of gastric juice that is required for the proper digestion of a given amount of ingesta, Dr. Dalton has given the following as the result of his investigations on this subject; and, although the statement may appear, at the first glance, extreme and exaggerated, on a careful perusal of his remarks we feel fully convinced that the truth of his views will be borne out by future experiment:—

"A very interesting question is that which relates to the *total quantity* of gastric juice secreted daily. Whenever direct experiments have been performed with a view of ascertaining this point, their results have given a considerably larger quantity than was anticipated. Bidder and Schmidt found that, in a dog weighing 34 pounds, they were able to obtain by separate experiments, consuming in all 12 hours, one pound and three-quarters of gastric juice. The total quantity, therefore, for 24 hours, in the same animal, would be $3\frac{1}{2}$ pounds; and, by applying the same calculation to a man of medium size, the authors estimate the total daily quantity in the human subject as little less than 14 pounds (av.). This estimate is probably not an exaggerated one. In order to determine the question, however, if possible, in a different way, we adopted the following plan of experiment with the gastric juice of the dog. It was first ascertained, by direct experiment, that the fresh lean meat of the bullock's heart loses, by complete desiccation, 78 per cent. of its weight. 300 grains of such meat, cut into small pieces, were then digested for ten hours, in ℥iss of gastric juice at 100° F.; the mixture being thoroughly agitated as often as every hour, in order to insure the digestion of as large a quantity of meat as possible. The meat remaining undissolved was then collected on a previously weighed filter, and evaporated to dryness. The dry residue weighed 55 grains. This represented, allowing for the loss by evaporation, 250 grains of the meat, in its natural moist condition; 50 grains of meat were then dissolved by ℥iss of gastric juice, or $33\frac{1}{3}$ grains per ounce.

"From these data we can form some idea of the large quantity of gastric juice secreted in the dog during the process of digestion. One pound of meat is only a moderate meal for a medium-sized animal; and yet, to dissolve this quantity, no less than *thirteen pints* of gastric juice will be necessary. This quantity, or any approximation to it, would be altogether incredible, if we did not recollect that the gastric juice, as soon as it has dissolved its quota of

food, *is immediately reabsorbed*, and again enters the circulation, together with the alimentary substances which it holds in solution. The secretion and reabsorption of the gastric juice then go on simultaneously; and the fluids which the blood loses by one process are incessantly restored to it by the other. A very large quantity, therefore, of the secretion may be poured out during the digestion of a meal, at an expense to the blood, at any one time, of only two or three ounces of fluid. The simplest investigation shows that the gastric juice does not accumulate in the stomach in any considerable quantity during digestion; but that it is gradully secreted so long as any food remains undissolved, each portion, as it is digested, being disposed of by reabsorption, together with its solvent fluid. There is accordingly, during digestion, a constant circulation of the digestive fluids from the bloodvessels to the alimentary canal, and from the alimentary canal back again to the bloodvessels.

"That this circulation really does take place is proved by the following facts:—First, if a dog be killed some hours after feeding, there is never more than a very small quantity of fluid found in the stomach, just sufficient to smear over and penetrate the half digested pieces of meat; and, secondly, in the living animal, gastric juice, drawn from the fistula five or six hours after digestion has been going on, contains little or no more organic matter in solution than that extracted fifteen to thirty minutes after the introduction of food. It has evidently been freshly secreted; and, in order to obtain gastric juice saturated with alimentary matter, it must be artificially digested with food in test tubes, where this constant absorption and renovation cannot take place."

With respect to the reabsorption of the bile after it has performed its destined function of assisting in the process of digestion, the author thus expresses himself:—

"We have endeavoured to complete the evidence thus furnished by Bidder and Schmidt, and to demonstrate directly the reabsorption of the biliary matters, by searching for them in the ingredients of the portal blood. We have examined, for this purpose, the portal blood of dogs, killed at various periods after feeding. The animals were killed by section of the medulla oblongata, a ligature immediately placed on the portal vein, while the circulation was still active, and the requisite quantity of blood collected by opening the vein. The blood was sometimes immediately evaporated to dryness by the water bath. Sometimes it was coagulated by boiling in a porcelain capsule, over a spirit lamp, with water and an excess of sulphate of soda, and the filtered watery solution afterward examined. But most frequently the blood, after being collected from the vein, was coagulated by the gradual addition of three times its volume of alcohol at ninety-five per cent., stirring the mixture constantly, so as to make the coagulation gradual and uniform. It was then filtered, the moist mass remaining on the filter subjected to

strong pressure in a linen bag, by a porcelain press, and the fluid thus obtained added to that previously filtered. The entire spirituous solution was then evaporated to dryness, the dry residue extracted with absolute alcohol, and the alcoholic solution treated as usual, with ether, &c., to discover the presence of biliary matters. In every instance, blood was taken at the same time from the jugular, or the abdominal vena cava, and treated in the same way for purposes of comparison.

"We have examined the blood in this way, one, four, six, nine, eleven and a half, twelve, and twenty hours after feeding. As the result of these examinations, we have found that in the venous blood, both of the portal vein and of the general circulation, there exists a substance soluble in water and absolute alcohol, and precipitable by ether from its alcoholic solution. This substance is often considerably more abundant in the portal blood than in that taken from the general venous system. It adheres closely to the sides of the glass after precipitation, so that it is always difficult, and often impossible, to obtain enough of it, mixed with ether, for microscopic examination. It dissolves, also, like the biliary substances, with great readiness in water; but in no instance have we ever been able to obtain from it such a satisfactory reaction with Pettenkofer's test as would indicate the presence of bile. This is not because the reaction is masked, as might be suspected, by some of the other ingredients of the blood; for if at the same time, two drops of bile be added to half an ounce of blood taken from the abdominal vena cava, and the two specimens treated alike, the ether precipitate may be considerably more abundant in the case of the portal blood; and yet that from the blood of the vena cava, dissolved in water, will give Pettenkofer's reaction for bile perfectly, while that of the portal blood will give no such reaction.

"Notwithstanding, then, the irresistible evidence afforded by the experiments of Bidder and Schmidt, that the biliary matters are really taken up by the portal blood, we have failed to recognise them there by Pettenkofer's test. They must accordingly undergo certain alterations in the intestine, previously to their absorption, so that they no longer give the ordinary reaction of the biliary substances. We cannot say, at present, precisely what these alterations are; but they are evidently transformations of a catalytic nature, produced by the contact of the bile with the intestinal juices.

"The bile, therefore, is a secretion which has not yet accomplished its function when it is discharged from the liver and poured into the intestine. On the contrary, during its passage through the intestine it is still in the interior of the body, in contact with glandular surfaces, and mingled with various organic substances, the ingredients of the intestinal fluids, which act upon it as catalytic bodies, and produce in it new transformations. This may account for the fact stated above, that the bile, though a constant and uninterrupted secretion, is nevertheless poured into the intestine in the greatest abundance immediately after a hearty meal. This is not

because it is to take any direct part in the digestion of the food; but because the intestinal fluids, being themselves present at that time in the greatest abundance, can then act upon and decompose the greatest quantity of bile. At all events, the biliary ingredients, after being altered and transformed in the intestine, as they might be in the interior of a glandular organ, re-enter the blood under some new form, and are carried away by the circulation, to complete their function in some other part of the body."

The following are very curious phenomena, depending on the extirpation of the spleen :—

"A very remarkable fact with regard to the spleen is that it may be entirely removed, in many of the lower animals, without its loss producing any serious permanent injury. This experiment has been frequently performed by various observers, and we have ourselves repeated it several times with similar results. The organ may be easily removed in the dog or the cat, by drawing it out of the abdomen, through an opening in the median line, placing a few ligatures upon the vessels of the gastro-splenic omentum, and then dividing the vessels between the ligatures and the spleen. The wound usually heals without difficulty; and if the animal be killed some weeks afterward, the only remaining trace of the operation is an adhesion of the omentum to the inner surface of the abdominal parietes, at the situation of the original wound.

"The most constant and permanent effect of a removal of the spleen is an unusual increase of the appetite. This symptom we have observed in some instances to be excessively developed; so that the animal would at all times throw himself, with an unnatural avidity, upon any kind of food offered him. We have seen a dog, subjected to this operation, afterwards feed without hesitation upon the flesh of other dogs; and even devour greedily the entrails taken warm from the abdomen of the recently killed animal. The food taken in this unusual quantity is, however, perfectly well digested; and the animal will often gain very perceptibly in weight. In one instance, a cat, in whom the unnatural appetite was marked, though not excessive, increased in weight from five to six pounds, in the course of a little less than two months; and at the same time the fur became sleek and glossy, and there was a considerable improvement in the general appearance of the animal.

"Another symptom, which usually follows removal of the spleen, is an unnatural ferocity of disposition. The animal will frequently attack others, of its own or a different species, without any apparent cause, and without any regard to the difference of size, strength, &c. This symptom is sometimes equally excessive with that of an unnatural appetite; while in other instances it shows itself only in occasional outbursts of irritability and violence.

"Neither of the symptoms, however, which we have just described appeared to exert any permanently injurious effect upon the

animal which has been subjected to the operation; and life may be prolonged for an indefinite period, without any serious disturbance of the nutritive process, after the spleen has been completely extirpated.

"We must accordingly regard the spleen, not as a single organ, but as associated with others, which may completely, or to a great extent, perform its functions after its entire removal. We have already noticed the similarity in structure between the spleen and the mesenteric and lymphatic glands; a similarity which has led some writers to regard them as more or less closely associated with each other in function, and to consider the spleen as an unusually developed lymphatic or mesenteric gland. It is true that this organ is provided with a comparatively scanty supply of lymphatic vessels; and the chyle, which is absorbed from the intestine, does not pass through the spleen as it passes through the remaining mesenteric glands. Still the physiological action of the spleen may correspond with that of the other lymphatic glands, so far as regards its influence on the blood; and there can be little doubt that its function is shared, either by them or by some other glandular organs, which become unnaturally active, and more or less perfectly supply its place after its complete removal."

In speaking of the reflex action of the nervous system, the author thus sums up his views on the subject:—

"We have now, in studying the functions of various parts of the cerebro-spinal system, become familiar with three different kinds of reflex action.

"The first is that of the spinal cord. Here, there is no proper sensation, and no direct consciousness of the act which is performed. It is simply a nervous impression, coming from the integument, and transformed by the gray matter of the spinal cord into a motor impulse destined for the muscles. This action will take place after the removal of the hemispheres, and the abolition of consciousness, as well as in the ordinary condition. The respiratory action of the medulla oblongata is of the same general character; that is, it is not necessarily connected with either volition or consciousness. The only peculiarity in this instance is, that the original nervous impression is of a special character, and its influence is finally exerted upon a special muscular apparatus. Actions of this nature are termed, *par excellence*, *reflex* actions.

"The second kind of reflex action takes place in the tuber annulare. Here the nervous impression, which is conveyed inward from the integument, instead of stopping at the spinal cord, passes onward to the tuber annulare, where it first gives rise to a conscious sensation; and this sensation is immediately followed by a voluntary act. Thus, if a crumb of bread fall into the larynx, the sensation produced by it excites the movement of coughing. The sensations of hunger and thirst excite a desire for food and drink.

The sexual impulse acts in precisely the same manner; the perception of particular objects giving rise immediately to special desires of a sexual character.

"It will be observed, in these instances, that, in the first place, the nervous sensation must be actually perceived, in order to produce its effect; and in the second place, that the action which follows is wholly voluntary in character. But the most important peculiarity in this respect is that the voluntary impulse follows *directly* upon the receipt of the sensation. There is no intermediate reasoning or intellectual process. We do not cough because we know that this is the most effectual way to clear the larynx; but simply because we are impelled to do so by the sensation which is felt at the time. We do not take food or drink because we know that they are necessary to support life, much less because we understand the mode in which they accomplish this object; but merely because we desire them whenever we feel the sensations of hunger and thirst.

"All actions of this nature are termed *instinctive.* They are voluntary in character, but are performed blindly; that is, without any idea of the ultimate object to be accomplished by them, and simply in consequence of the receipt of a particular sensation. Accordingly, experience, judgment, and adaptation, have nothing to do with these actions. Thus the bee builds his cell on the plan of a mathematical figure, without ever performing any mathematical calculation. The silkworm wraps himself in a cocoon of his own spinning, certainly without knowing that it is to afford him shelter during the period of his metamorphosis. The fowl incubates her eggs, and keeps them at the proper temperature for development, simply because the sight of them creates in her a desire to do so. The habits of these animals, it is true, are so arranged by nature, that such instinctive actions are always calculated to accomplish an ultimate object. But this calculation is not made by the animal himself, and does not form any part of his mental operations. There is, consequently, no improvement in the mode of performing such actions, and but little deviation under a variety of circumstances.

"The third kind of reflex action requires the co-operation of the hemispheres. Here, the nervous impression is not only conveyed to the tuber annulare, and converted into a sensation, but, still following upward the course of the fibres to the cerebrum, it there gives rise to a special train of ideas. We understand then the external source of the sensation, the manner in which it is calculated to affect us, and how by our actions we may turn it to our advantage or otherwise. The action which follows, therefore, in these cases, is not simply voluntary, but *reasonable.* It does not depend directly upon the external sensation, but upon an intellectual process which intervenes between the sensation and the volition. These actions are distinguished, accordingly, by a character of definite contrivance, and a conscious adaptation of means to ends; charac-

teristics which do not belong to any other operations of the nervous system.

"The possession of this kind of intelligence and reasoning power is not confined to the human species. We have already seen that there are many purely instinctive actions in man, as well as in animals. It is no less true, that in the higher animals there is often the same exercise of reasoning power as in man. The degree of this power is much less in them than in him, but its nature is the same. Whenever, in an animal, we see any action performed with the evident intention of accomplishing a particular object, to which it is properly adapted, such an act is plainly the result of reasoning powers, not essentially different from our own. The establishment of sentinels by gregarious animals, to warn the herd of the approach of danger; the recollection of punishment inflicted for a particular action, and the subsequent avoidance or concealment of that action; the teachability of many animals, and their capacity of forming new habits or of improving the old ones, are all instances of the same kind of intellectual power, and are quite different from instinct, strictly speaking. It is this faculty which especially predominates over the others in the higher classes of animals, and which finally attains its maximum of development in the human species."

It would be a task as invidious as unprofitable to take up the reader's time with any further quotations, as, from the extracts given above, a very fair estimate may be formed of the spirit that prevails in the entire volume. In its purity of style and elegance of composition it may safely take its place with the very best of our English classics, while in accuracy of description it is impossible that it could be surpassed. In every line is beautifully shadowed forth the emanations of the polished scholar, whose reflections are clothed in a garb as interesting as they are impressive; with the one predominant feeling appearing to pervade the whole—an anxious desire to please and at the same time to instruct. The assistance of art has likewise been invoked as auxiliary to the powers of verbal description, and the faithful illustrations with which nearly every page is studded are such as to do infinite credit to the genius and enterprise of our Transatlantic brethren in this particular department. In closing our observations on this production of Dr. Dalton, we can only reiterate what we have already stated—the firm conviction we entertain that it must yet take its place on the shelves of the physiologist, as one of the best and most effective works that has appeared for many years.

A Treatise on Medical Electricity, Theoretical and Practical; and its Use in the Treatment of Paralysis, Neuralgia, and other Diseases. By J. Althaus, M. D. London: Trübner & Co. 1859. 8vo, pp. 352.

That the two most powerful agents in all nature, electricity and oxygen, the two most extensively diffused, and the two which every day we witness producing around us the most energetic action, should hitherto have proved but of little service in the treatment of disease in the hands of the practising physician, has been the subject of surprise and astonishment in the minds of all who have ever reflected on the subject. Various have been the efforts made to press them into the service of the therapeutist; and the success attending such efforts has been so varying, and the reports as to their efficacy so contradictory, that we believe we would but be giving the unanimous verdict of the great majority of practitioners were we to state that, on the whole, they have been worse than useless in the treatment of disease,—producing either *positive* injury by their injudicious administration, or *negative* injury by being employed to the exclusion of remedies of more approved efficacy. Therefore is it that we hail with pleasure the appearance of a treatise on the subject of medical electricity, evidently the work of a scientific mind, anxious to place at our disposal all the facts connected with this plan of treating disease, to state on what grounds we should employ it, the manner in which it should be used, and the circumstances that contra-indicate its administration.

And that Dr. Althaus is not himself unimpressed with the contradictory nature of the opinions entertained by the profession as to the therapeutic value of electricity, is proved by this passage, which we extract from his preface, in which also he has given the true explanation of why this diversity of opinion should prevail. In our minds it is one of the strongest arguments we can employ with our readers when we recommend to their perusal and consideration the present work, in which the whole question is treated in a comprehensive, scientific, and practical manner.

"There are few remedies employed in the treatment of disease on the value of which the professional mind is less settled than on that of galvanism. Enthusiastic panegyrists contended, fifty years ago, and contend still, that it is a theurapeutical agent superior to all hitherto discovered, whilst the great majority of the profession entertain serious doubts as to the reality of the remarkable successes which are now and then recorded by medical galvanists.

"The differences of opinion about the therapeutical value of electricity are readily to be understood if we bear in mind that the mode in which electricity is applied has an all-important bearing upon the results. It is true that even by a careless employment of galvanism a few accidental successes have been obtained; but in ninety-nine cases out of a hundred, empirical galvanists, being unacquainted with the physiological effects of electricity, have been disappointed, and have brought the remedy into undeserved contempt.

"We know that, whatever may be the properties of the nerves, they can be called into action by galvanism. But the effects are widely different according to the form of electricity that is used; again, the quantity and intensity of electricity are both of great importance; not less so the mode in which it is transmitted to the human body, and the length of time during which its action is kept up. In fact, we are able by merely varying the modes of applying electricity, to arouse or to kill the vital power of the nerves, and to diminish or to increase their properties. Hence electricity can only be expected to be of service in the treatment of disease, if we are guided in its use by an exact knowledge of the physiological effects which it will invariably produce. I have, therefore, been most anxious to render the physiological part of my work as complete and comprehensive as possible."

The work itself is divided into five chapters, the first of which treats of the different forms of electricity. The second is occupied with a consideration of what the author terms electro-physiology, and is, perhaps, one of the most instructive chapters in the entire work: in it we find fully stated all that has hitherto been ascertained by former investigators, together with much original matter; he places at our command a full resumé of the subject, and points out accurately the differences in the physiological effects produced by electricity, depending on the form, quantity, and intensity of it employed, the mode in which it is transmitted to the various organs subjected to its application, and on the function and state of vitality of the organ submitted to its action.

The third chapter is devoted to the consideration of the various kinds of apparatus employed either in electrization, galvanization, or faradization, and, in our opinion, would have had its value much enhanced for the student had Dr. Althaus introduced a few plates, illustrative of the different kinds of instruments he has described.

The fourth chapter enters into an examination of the *quæstio vexata* of electricity as a means of diagnosis. Marshall Hall, Todd, Copland, Pereira, Duchenne, each in their turn have their views submitted to a rigorous examination; and the author winds up the subject with the following summary, the

facts in which have been, in our mind, substantiated by his previous reasoning:—

"We have thus arrived at the result that the muscles of paralyzed limbs may present three different conditions when subjected to the action of the electric current, and that this may enable us, in certain cases, to form the diagnosis of the paralyzing lesion.

"1. If the excitability of the muscles—or rather the polarity of the motor nerves—be *increased* in the paralyzed limb, the case is one of *cerebral paralysis*, connected with an irritative lesion within the cranium.

"2. If the excitability of the muscles be nearly or totally *lost*, we have, in all probability, either *lead palsy* or *traumatic paralysis;* but it must be kept in mind that certain hysterical and rheumatic palsies of long standing present the same peculiarity; and that it may also be found in cases of disease of the brain and cord.

"3. *If paralyzed muscles respond readily to the electric current*, there is no lead in the system, nor is the connexion between the motor nerves of the paralyzed muscles and the cord interrupted; but if such cases are of *long standing*, they are due to *brain disease;* and if they are of *recent standing*, they are generally instances of *hysterical*, *rheumatic*, or *spontaneous* paralysis."

The fifth chapter, after all, we imagine, will prove of greatest interest for the medical man actively engaged in the duties of his profession. It is occupied with a consideration of the subject of electro-therapeutics. The principal diseases in which it has been employed are enumerated, and the success attending its application is stated with apparently extreme candour. Many illustrative cases are recorded, and justice compels us to add that Dr. Althaus has handled this portion of his subject with singular ability and strict impartiality. One omission struck us as being strange, that no mention is made of "painters' colic" as being one of those diseases in which marked and speedy relief has been obtained by the Faradic plan of treatment. We now refer to the relief afforded to the excruciating *pain* so frequently a prominent symptom in this disease, for full justice has been meted out to it as a remedy for the constipation and paralysis attendant on saturnine intoxication. This chapter concludes with a passage that merits well the most careful consideration at the hands of our professional brethren, for we fear much that the employment of this agent, so potent either for good or evil, has been too frequently based on an empirical foundation, it being but too generally believed that if it does no good, it can certainly do no harm. How true this opinion may be, will be at once decided by a perusal of the passage in question:—

"In conclusion, a few words may be said on the accidents which may be caused by an injudicious application of electricity. This powerful agent is not one of those remedies which, if they do no good, can do no harm; but, on the contrary, it may, in the hands of an inexperienced operator, do a great deal of mischief. Thus, blindness has been caused by the application of the continuous current to the face in paralysis of the portio dura; fainting, cramps, hysterical fits, and palsies have been produced by administering too powerful currents; and fresh apoplectic attacks have been induced in patients who had suffered before from hemorrhage into the brain. Accidents of this kind can only be avoided if the operator is guided by physiological knowledge and sufficient therapeutical experience. In this remedy more than in any other the mode of application has an all-important bearing upon the results; for it is not electricity that cures diseases, but the physician, who may cure diseases by means of electricity."

The book concludes with an Appendix, containing some interesting details in connexion with atmospheric electricity and lightning; and the entire work is one that, in these days of book-making, it is refreshing to meet with. It is, as we have before stated, evidently the production of a philosopher, and of one who studies his profession in the only way in which it ever should be studied—in a sound spirit of inductive philosophy. And we are but discharging our duty to our readers in most strongly recommending it to their notice.

Some Observations on the Coagulation of the Blood. By JOHN DAVY, M. D., F. R. S. Lond. and Edin. Reprinted from the Transactions of the Royal Society of Edinburgh. 4to, pp. 7.

DR. DAVY details a number of experiments suggested by Dr. Richardson's elaborate and able work on the "Causes of the Coagulation of the Blood," which we have reviewed at considerable length in the twenty-fifth volume of our present series. Dr. Davy's investigations appear to have been judiciously designed and carefully conducted, and lead him to conclusions very different from those deduced by Dr. Richardson. We shall briefly describe his principal results.

From a number of experiments on the blood of the common fowl, obtained by dividing the great vessels in the neck, and selected because the blood of birds exhibits the phenomenon in question in the most striking and rapid manner,—the author infers:—

1. That there are no indications afforded of the escape of volatile ammonia during the coagulation of the blood of the fowl, or of the presence of this principle in the blood.

2. That the addition of ammonia in a notable quantity does not prevent coagulation.

3. That a sudden reduction of the temperature of the blood, even when fully exposed to the air, has a greater influence in retarding the coagulation than the assigned cause of its fluidity, the volatile alkali when added.

The few trials made by the author with the sesquicarbonate and neutral carbonate of ammonia tend to show that—

"These salts of ammonia, used in small quantities, have the effect of retarding coagulation, analogous in this their influence to most of the salts of the alkalies; and, like them, we know that in a large proportion they prevent it, and yet that, on dilution with water, coagulation takes place."

Some further experiments, also made with the view of testing the hypothesis advanced, that the presence of ammonia in the blood is the cause of its fluidity, are detailed. These are designed to show that—

"Even on the supposition of ammonia existing in the blood in a volatile form, no appreciable quantity can escape in the short period of two or three minutes, which is about the time required for the coagulation of the blood of the fowl."

And that—

"The volatile alkali, in its action on fibrin, is chiefly remarkable for rendering it viscid, and that its solvent power is inconsiderable."

Dr. Davy, in conclusion, observes, that as his results—

"Are opposed to the inference of the coagulation of the blood being owing to the escape of any volatile matter, and, *à fortiori*, of the volatile alkali, the existence of which in the blood even remains to be proved, they leave the phenomenon, as hitherto, a problem for solution, and open to question whether it be the result of loss of vitality, or a chemical result depending on a new arrangement of elements of the coagulating part, the fibrin, without, as regards their number, any change of their sum."

We have thus endeavoured to lay before our readers, nearly in the language of the author, the principal inferences drawn by Dr. Davy from his investigations, referring those anxious to pursue the subject further to the original communication for the details of the experiments. Valuable as the researches of

Dr. Richardson are on all sides admitted to have been, there can be no doubt they did not finally decide the question they were designed to answer, and it is to be expected that the re-opening thereof by so distinguished a philosopher as Dr. Davy shall have the effect of directing fresh inquiries to this important subject, and of eventually throwing light upon it.

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1. *Om Uræmi.* Af S. G. Troilius.

   On Uræmia. By S. G. Troilius. Stockholm: Eric Westrell. 1858. 8vo, pp. 56.

2. *Kort Öfversigt af Epidemiska Sjukdomar i Sverige under år* 1857. Af A. Timoleon Wistrand. (Aftryck ur *Hygiea.*)

   A brief Review of the Diseases Epidemic in Sweden in 1857. By A. Timoleon Wistrand. (Reprinted from the *Hygiea.*) Pp. 26.

3. *Kort Öfversigt af Koppfarsoten i Sverige åren* 1847–1855. Meddelad af Dr. Timoleon Wistrand. (Aftryck utur *Hygiea.*)

   A short Review of the Epidemic of Small-pox in Sweden during the Years 1847–1855. Communicated by Dr. Timoleon Wistrand. (Reprinted from the *Hygiea.*) Pp. 10.

4. *Rättsmedicinska Utlåtanden.* Meddelade af A. Timoleon Wistrand. 1–2.

   Findings in Forensic Medicine. Communicated by A. Timoleon Wistrand. 1–2. Stockholm: Norstedt and Sons, Printers to the King. 1859. Pp. 15.

5. *Beretning om Behandlingen paa Rigs hospitalets Hudsygeafdeling fra* 1*ste Juli*, 1856, *til* 30*te Juni*, 1858. Af Reservelæge A. Holst, Aftrykt af Norsk Magazin for Lægevidenskaben, xiii. Bd., 8 Hefte.

   Report on the Treatment in the Division of the Royal Hospital appropriated to Cutaneous Diseases, from July 1, 1856, *to June* 30, 1858. By A. Holst, Physician Extraordinary. Reprint from the Norsk Magazine. 8vo, pp. 36.

1. The first work in the above list is an academic thesis for a degree in medicine in the University of Upsal, containing a careful resumé of the observations of British and Continental writers upon the subject of which it treats. The author con-

cludes the first part of the work with the following propositions:—

i. For the occurrence of uræmia, urea must exist in the blood in abnormal quantity.

ii. Intoxication does not, however, take place, until the urea has undergone some change, which is as yet imperfectly understood.

iii. The causes of this change are rather suspected than positively demonstrated.

iv. It is probable, though it is not fully ascertained, that the change in question consists in the conversion of urea into carbonate of ammonia.

v. The definition of uræmia, therefore, is:—Intoxication depending on the presence in the blood of the products of the decomposition of urea.

2. In the opening paragraph of the second pamphlet in our list, Dr. Wistrand informs us that the year 1857 was, in Sweden, one of very unusual sickness. This he attributes principally to the great heat of the midsummer, which, after a dry winter, produced several weeks of uninterrupted drought, and caused in many places a scarcity of drinkable water, undoubtedly laying the foundation of the tendency to disease in the digestive organs, which at that time began to manifest itself in several parts of the country. In addition, the deficiency of the harvest of the preceding year in some localities, caused the food to be of not the best quality, and this, together with the high price of the necessaries of life, contributed to favour the general unhealthiness.

In an epidemiological point of view, the year 1857 bore a general resemblance to the preceding year, the prevalent diseases being, as in 1856, eruptive fevers, hooping-cough, mumps, gastric, nervous, inflammatory, and catarrhal fevers, brain fevers, cholera, dysentery, diarrhœa, and ague; scarlet fever, measles, and hooping-cough, continued rather prevalent, about equally so as in 1856; gastric and nervous fevers occurred, as in the preceding year, in general only sparingly; croup, too, manifested itself only sporadically; and diphtheritis here and there followed both this and the eruptive fevers. In 1857, as in 1856, there was no such unusual tendency to abscesses and whitlows as was observed in 1855.

Among the points of difference it is to be remarked that the most prominent disease of the preceding year, ague, occurred comparatively rarely; that the epidemic of small-pox, which broke out in 1856, progressively acquired considerable

extent; that the epidemic meningitis likewise increased in frequency and extent; that cholera again occurred with a frequency which had for many years been rarely observed; and that dysentery devastated great parts of the kingdom with unusual violence; in addition, an epidemic catarrhal fever had, with much violence, passed over the greater part of the land; and lastly, scurvy had, in certain places, attacked the population to an unusual extent.

Dysentery, cholera, brain fever, and influenza, were the most prominent epidemics of the year.

3. From Dr. Wistrand's second pamphlet, the third on our list, we learn that, exclusively of the epidemic which forms the special subject of the work, not less than three closely consecutive epidemics of small-pox, each lasting several years, have, since 1822, invaded Sweden. The years of culmination have been:—1825, deaths 1243; 1833, deaths 1145; 1839, deaths 1934; and 1851, deaths 2488. The years of greatest diminution have been:—1829, deaths 53; 1836, deaths 138; 1843–1846, deaths 9, 6, 6, and 2, respectively; and 1855, deaths 41. The author remarks that, in general, the epidemic has manifested a fresh increase about every seventh year.

4. The fourth pamphlet quoted at the head of this article is a "Contribution to Medico-Legal Investigations respecting Bodily Injuries in Drunken Individuals." Cases not unfrequently occur where injured persons have been stupified with strong drink, and the question arises, whether this circumstance has contributed to the fatal result of the injury. The author points out that it is essential to ascertain whether the excess of spirits has been taken before or after the receipt of the injury. In the former case, or when any one in a state of intoxication gets into a fray, and afterwards dies, the intoxicated state can, with respect to the effects of the injury, be considered only as a particular state of the body,—a preceding morbid condition in the injured person,—which certainly, if the drunkenness has attained its highest degree, might, independently of the injury, have terminated fatally, but otherwise, as every previous morbid state in an injured person, has, in an objective respect, no importance, or only remote importance, in the question of the effect of the bodily injury in producing death.

But, in the latter case, when any one, after being injured, drinks to excess, the drunkenness must be considered as a superadded disaster, which may have a very essential influence on the results of the injury, and so may co-operate in producing

the fatal result. If the injured person has, in his drunken fit, fallen down and further injured himself, the question also arises, whether, and to what extent, this latter accident may have contributed to cause the patient's death.

After some further observations, two cases are given, at considerable length, in illustration. Of these we can only quote the headings:—

i. *Lars Svenson, somewhat intoxicated, was beaten and kicked, and died immediately after. On post-mortem examination, wounds and ecchymoses were found on the head, and extravasation of the blood within the skull.*

The Court having requested the Royal College of Health to state their opinion as to how far the deceased's death was due to violence, &c., the College answered, after due investigation (ransakning):—

1. That the proximate cause of Lars Svenson's death, which took place on the 21st of July, was the extensive extravasations of blood within the skull, observed at the post-mortem examination.

2. That these extravasations of blood were undoubtedly caused by the violence committed on the diseased shortly before his death by the accused, Anders Nilson, Svärd, and Magnusson.

3. That it cannot, with certainty, be decided which of the blows inflicted on the head was the principal cause of the extravasation of blood within the skull; but that the latter must be assumed to have been the result of all the blows in common.

4. That the circumstance that the deceased had been, on this occasion, somewhat intoxicated, cannot reasonably be assumed to have contributed to the development of the extravasations of blood, and, consequently, cannot have been in any respect conducive to his death.

The second case is thus headed:—

ii. *Anders Olsson, intoxicated, falls down, and loses all sensation and power of motion; is violently shaken with a view to produce vomiting; dies after the lapse of some hours. On post-mortem examination, suspected bruises on the neck and several parts of the body; extravasation of blood within the skull.*

The report of the College of Health on this case was:—That the proximate cause of Anders Olsson's death undoubtedly was the considerable extravasation of blood observed within the skull at the post-mortem examination; that this extravasation of blood, considering that Anders Olsson in going from the ale-house became more and more unconscious, and finally, after falling down at Brändgården, lost all sense and

power of motion, may reasonably be assumed to have occurred in consequence of his intoxicated state, with the co-operation of the severe cold to which he was exposed, and the fall he got while in this condition; but, that nevertheless, the careless treatment which Plog Anders Olsson, and Qvarnberg Hans Ersson (though with good intention), and afterwards Lispers Anders Olsson, subjected him to, cannot be adjudged free from all co-operation in increasing the extravasation, and, therefore, in some measure, in hastening the fatal result.

5. The portion of the Royal Hospital at Christiania intended for the reception of cutaneous diseases would appear, from Dr. Holst's Report, to be by no means reserved exclusively for affections of the skin. Some among the non-cutaneous diseases enumerated in the table may, no doubt, have occurred intercurrently, but others contribute so large a quota that this can scarcely be the case. Syphilization occupies a comparatively large section of Dr. Holst's pamphlet; but this is a subject which we have already sufficiently considered in former Numbers of this Journal. The following is an extract from the author's observations upon syphilis:—

"Primary syphilitic ulcers were always touched with caustic, and covered with lint dipped in chlorine water or liquor plumbi, the wet lint being frequently changed. The caustics used were the Vienna paste, Lapis infernalis, or Ricord's paste above mentioned. Internal remedies were never employed; consequently, mercury was never given. The indurated chancre was treated in the same manner as the simple, as it was believed to be far from certain that the adoption of an anti-syphilitic treatment would prevent the occurrence of secondary syphilitic symptoms.

"According to what I observed during this period, I consider that the difference between the indurated and the non-indurated, so-called simple chancre, is not so great as is generally thought, or, in other words, I believe in the unity of the virus, as it has frequently happened, particularly in females, that simple chancre has been followed by secondary syphilis.

"Secondary cases, of which many have been under treatment during the time comprised in the Report, have most frequently been developed six, eight, or ten weeks after the occurrence of the primary chancre. In men cicatrices have generally been left after the chancre or suppurated inguinal glands, while in women they were often absent."

The Institutes of Medicine. By MARTYN PAYNE, M. D., Professor of the Institutes of Medicine and Materia Medica in the University of the City of New York. New York: Harper and Brothers. 1858. Fourth Edition, pp. 1095.

A BOOK which has passed through four editions is usually considered to have stood the test of criticism with success, and to have fairly established for itself a place in public esteem. But this judgment is founded on an inadequate appreciation of the manifold causes of successful book-writing. It is occasionally rather connected with temporary conditions, such as mere controversy for more or less personal ends, than with permanent or really useful additions to our knowledge. In biography the craving for the details of the life of a recently dead hero, savant, or statesman, is sufficiently powerful to outweigh even considerable defects in the manner of conveying such details. Perhaps the most popular biography in the English language is Southey's Life of Nelson, but it is certainly a book of very small real merit as compared with the appreciation in which it is held; Bishop Tomline's Life of Pitt is simply contemptible, though long quoted as an important contribution to literature; Newton's Life was reserved, after several feeble efforts, for the masterly hand of Brewster; and we hope that we shall yet see such a memoir of Sir Humphrey Davy as will give a just estimate of this many-sided mind. The temporary wants of education, the accidental position of the author, will often give an adventitious importance to a book of very poor performance. Many a man is a hero to his class, and is apt to imagine the outside and more advanced public equally ready to purchase and to praise his written efforts as the enthusiastic youths who crowd his benches. Armstrong's Lectures on the Practice of Physic, while containing many indications of genius, and not a few really eloquent passages, have long lost what place they ever had in general estimation, though it is evident their author thought himself a great public benefactor, an opinion in which he was fortified by the undiscriminating laudations of the little public who sat before his chair.

There are some men, too, who, having got hold of what they consider a great idea,—one of great importance to the community,—never cease to bore the public with the reiterated declarations of their views, for the most part in a highly polemical spirit, and a certain amount of success is finally attained. Thus Marshall Hall deemed himself the prophet of the true spinal cord. He must have often dreamed of excito-motor functions, if his inner life was at all a reflex of the con-

tinuous excitement which he maintained so sorely out of doors. No book was too crude, too imperfect, which served to launch upon his satiated brethren his notions of nervous actions. Here was a truly great man, who contrived to make himself half ridiculous and wholly disliked, by yielding himself up to one notion, one side of which was all he would see or understand. Similarly, Dr. Payne seems to believe himself specially called upon to inform the world that there is such a thing as a vital principle; that chemistry and mechanics have nothing to do in animal life; and that all actions are in subordination to that principle only. Seeing this point most strongly, his eyes are nearly closed to the mighty mass of knowledge derived of late years from physics and chemical science: and he fastens upon Liebig an amount of quotation, with adverse criticisms annexed, which must have astonished that learned chemist's publisher. In his own city there is an eloquent expositor of very different views in the person of Dr. Draper, an earnest worker at physical and chemical science, but who sets at nought the speculations upon final causes and vital principles, which have been almost as definite and fundamental postulates to Dr. Payne. This circumstance might have contributed to sharpen the polemical spirit in our author. It is a misfortune that he did not attempt some more positive inquiries than those upon which he has entered, for modern physiology can scarcely give a *locus standi* to this professor. In argument with her energetic opponent she finds it difficult to pitch upon a common ground from whence to assault an author who believes questions of final causes of existences, the precise point of time at which the soul originated, and the relation of a vital agent to certain functions, fitting questions for controversy, inquiry, and observation: experiments being, of course, impossible.

Dr. Payn emakes a three-fold and very sound division of his subject. The first 400 pages are devoted to what the author considers physiology; the next 140 pages to pathology; the remainder to therapeutics, including a very extended omnium-gatherum appendix, and a truly mighty index, whose elaboration is certainly more than ordinarily disproportionate to the small value of the things indexed.

We shall not occupy ourselves with a full account of the chapters which go to form the first part, but will rather endeavour to place our readers in the point of view from which Dr. Payne has surveyed the wide domain of physiological science. He commences by declaring that solidism and vitalism will form the basis of the Institutes, and that the immediate ob-

jects of physiology are a critical analysis of the "vital conditions and results of organic beings," as manifested in different organs, and in their relations to each other. It contemplates organic nature, therefore, in its natural state; and the laws which it obeys are its highest end. Limiting thus the scope of the science, and the mode of ascertaining physiological laws, Dr. Payne rejects physical and chemical conditions from the one, and experiment from the other. In other parts of the treatise he shows us that he is quite prepared for such a conclusion. The author states that there are now three schools in the physiological world,—the chemical, whose chief is Liebig; the school of vitalism, whose chief is Dr. Payne; and the school of chemico-vitalism, whose chief is that ubiquitous personage, commonly styled—everybody,—if by that term the American Professor means the doctrine which recognises at once the importance of the organic substratum, and the peculiar properties of living bodies, and the vast rôle played by chemistry and physics in animal life. But this last school appears to Dr. Payne not less worthy of repudiation than the exclusive chemical school, for, according to him, it makes "a compromise with philosophy," and takes for its rule, "in medio tutissimus ibis." This is the school to which the young student has the greatest chance of becoming the victim, although it is regardless, as we are gravely told, of the universal consent with which physiology has been hitherto restricted to the conditions, functions, results, and laws of living beings; and chemistry, to the conditions and laws of dead matter. This divorce of sister sciences, which mutually illustrate and explain each other, is as unnatural as it is impossible. We cannot express in intelligible language the simplest or the most complex parts of physiology without having recourse to the facts and doctrines of chemistry and physics. Fortunately, such language is not mere metaphor, but is supported by irrefragable analogies, which offer proof of the nexus which binds so closely the whole material world. But Dr. Payne, in his aversion to the mere chemical theory of animal functions, rushes headlong to the denial of the relation of chemical forces to those functions; and treats of life as an entity not merely separate from other material things, which may be fairly admitted, but as something acting altogether, and under all circumstances, under the dominion of laws unknown in the inorganic world.

This mental peculiarity prevents the author from adequately appreciating the most patent facts in the science, and drives him to conclusions both paradoxical and retrogressive. As for compromise, no one is fitted to write about any matter in sci-

ence or art who has not thoroughly learned that all mundane knowledge is based on compromise, the conciliation of varied impulses, and the correlation of diverse forces. The author sits heavily upon Liebig, from whom there are innumerable quotations in the early part of the book, and who really appears to be his *mauvais sujet.* The chemist's very just admission that the elements of organic beings are united by a peculiar mode of attraction, resulting from the existence of a power distinct from all other powers in nature, is at once seized by his critic as a justification even of "transcendental vitalism" in all its aspects. But if this be the case, all the elaborate refutations of Liebig's theories must be, at least, superfluous, on Dr. Payne's own showing. The vital properties are discussed at considerable length, and the "nervous power" has a great share of attention. The author does not pursue the time-honoured mode of interrogating functions through the phenomena they manifest either in natural or artificial conditions, although he appears to admit that this is the only method by which we can know anything about them; he prefers to discuss what the nervous power is not, rather than the nature of its manifestations; and finds in the connexion of the mind and body a basis of analogical argument by which we are to conceive the bond between the nervous power, the vital principle, and other parts of the organization. But here Dr. Payne inverts the important maxim of explaining obscure things by the less obscure. We despair of much progress in nerve physiology, if we are to await a fuller knowledge of the connexion of the mind and body as a preliminary to such progress. There is very imperfect information for the student in these chapters, for the acquaintance of the author with the subject stops with Bell, Müller, Marshall Hall, and Wilson Philip.

Under the head of "Absorption" we are told that Magendie was in error in supposing the veins had the power of absorption, and, *horribile dictu*, that the lacteals have open orifices in the intestinal villi, in spite of the microscopists, for whom Dr. Payne has a most genuine contempt; capillarity, endosmose and exosmose, are simply denied; and it is averred that noxious substances do not readily get into the circulation, "because the inoffensive colouring matter of the bile is alone absorbed." We feel sure that there are very few of Dr. Payne's pupils who are unable to correct this last remarkable misstatement, which is not creditable to the author. Remedial, like morbific agents, draw a very limited operation, through "their absorption into the circulation;" but all experience and

reliable experiments give a precise contradiction to this declaration.

The section on "Assimilation" is interesting on many grounds. The author can swallow a great deal,—his faith is greater than we have been accustomed to in these positive times,—but he doubts every sort of globule revealed by the microscope. The *naive* expression, that the "chyle is *said* to exhibit globules under the microscope, which is probably true," is really refreshing, when we consider how many hours we have devoted to their study. Still, it is not fair to express surprise at the Professor's ignorance, since he has a reason for it, which he does not fear to give. "These questions as to the existence and shape of the globules of blood, chyle, milk, &c., are of no further practical importance than as they lead to much waste of time, and incumber medicine with speculation and false doctrine." So much for the boasted science of the nineteenth century. So much for the pomp and circumstance of micrology,—for Robert Brown, Hewson, Wharton Jones, and so forth. Dr. Payne has measured them and their researches, and to him they are simply impediments to be brushed away.

The author treats of "Digestion" as a vital process only, and utterly repudiates all experiments which show that chemistry has anything to do with it. No reason can be assigned, he states, why the vital principle may not be equal to the whole work of digestion, and of every other process of living beings. Anything approaching to solid information is not to be found here, but its place is verbosely supplied by the weakest speculations. There is not the slightest allusion to Bernard, Bidder and Schmidt, Lenz, Lehmann, &c. &c.

In the section "on the Moving Powers of the Blood" we are informed that the venous circulation is determined principally by the suction or derivative power of the right cavities of the heart, but is aided by the contractile power of the large veins, by the more specific action of the capillary veins, and by the propelling power of the communicating series of arterial capillaries. The part of the heart as a propelling organ is left out by special desire, though we have the most positive experimental evidence that a demonstrably less propulsive *vis a tergo* than that exercised by this organ is competent to carry the blood through the whole system. But cannot our ingenious Professor see that he proves too much for the subsidiary forces which he partly invents and wholly exaggerates? The "contractile power" of the large veins must be a mere trifle com-

pared with that of the arteries, if force has anything to do with structure, which, possibly, Dr. Payne would not admit; when to this is added the *vis a fronte* resulting from the action of the capillaries and veins, supplemented by the central suction power, what can be the use of the left ventricle? Perhaps it has nothing to do with the circulation of the blood, notwithstanding Harvey and his followers, but may be, after all, the reservoir of the animal spirits, as some of the ancients believed. We commend this consideration to Dr. Payne in his next edition.

In the section on "Excretion" we find the statement that critical observations on the fluctuating states of the urine in disease are but relics of the superstitious ages of humoralism; and that all that "is practically useful" in relation to that secretion is generally "best ascertained by mere inspection; and upon this subject we have all, *and more than is desirable*, from Hippocrates himself!" At one stroke this eminent physiologist cuts away some of the most precious points of modern inquiry. Albumen, sugar, fibrinous casts, excess or deficiency of phosphates, sulphates, chlorides, crystalline deposits, and cell-products, are all engulfed in Dr. Payne's ignorance, and we are reminded that even Hippocrates knew too much of the urine.

The process of "Calorification" might have been imagined to be a stumbling-block to a non-believer in organic chemistry, but it does not prove so in these Institutes. The author regrets that mankind has been carried away by the simplicity of chemical dogmas, and elaborately controverts all that has been done in this aspect from Crawford to Liebig. With him heat is an animal product, produced by the inherent vital properties, having nothing to do with vulgar chemical combinations. Neither the union of the oxygen of the air with the carbon of the blood, nor with that of the body; "neither that act in respiration, nor the excretion of carbon, have any greater connexion with the production of animal heat than with that of the gastric juice, or any other result of the organic functions." He treats of the facts which show an instinctive desire for fatty foods in Arctic regions as vulgar prejudices, and finally concludes with the startling declaration that the physiologist undertakes no explanation of the modus in which organic heat is elaborated. He avoids all inquiries of that nature, although he might proceed to interrogate the manner in which the vital principle operates with as much propriety as the chemist speculates upon the cause of the phenomena of combustion. "But in doing this he would trespass upon in-

scrutable difficulties, and encumber philosophy with useless hypotheses."

The sections on the "Nervous Functions" are extremely unsatisfactory, and consist of quotations from Müller (though Dr. Payne does not follow that illustrious physiologist in other parts of his subject), and an extensive selection of the experiments of Wilson Philip. Many of these rather support the peculiar views of the author, which circumstance seems to have temporarily mitigated his aversion to experimental science. We have pleasure in avowing that here are many interesting observations and illustrations of sympathy, and we think the author is more at home here than in any other part of his work. The nature of the inquiry is more consentaneous to the mental peculiarities of the author than the other parts of physiology. This division is terminated by a "summary conclusion" on the unity of design in the science, which is a literary curiosity. The summary consists of seven pages and a half, and seven of these (each containing more than double one of ours) are without a full stop or capital letter. We need not say what Lord Macaulay and his short-sentence imitators would think of this, for every one can judge for himself that such writing is anything but easy reading. It defies quotation; but the author allows us to see that he believes the vital principle to lie at the foundation of all the phenomena, and that it will explain *every phenomenon* of animated beings.

Our readers will be prepared for the opinion that we have formed of Dr. Payne's first part. To the student it is worse than useless, for it is ridiculously imperfect; to the experienced physician and physiologist it must be, at least, uninteresting, as containing nothing which is not well known, mixed with much that is totally unworthy of study.

In the pathological division Dr. Payne takes a rapid survey of remote and proximate causes, recommending the substitution of "pathological" for the latter, though, as now generally admitted, it would be better to discard the term altogether. He then proceeds to discuss symptoms, such as those indicated by the tongue, pulse, secretions, and excretions. Some good observations are to be found in these sections, but all tainted by the singular one-sidedness of the author. Morbid anatomy is described and despised. Inflammation is rescued from the iconoclastic hands of Andral and the French school, and is again allowed to live and burn in these pages. The author discards the notion of the importance of the exudation, and evidently thinks that changes of the solids are all in all in

this process. All the results of the minute observations of the last thirty years are either denied or ignored. As he has expelled chemistry, physics, and the microscope from physiology, so has he put them away in pathology. Yet, without them, the author appears to us all afloat, without sail or anchor, drifting on the wide ocean of pre-positive speculations, under the uncertain guidance of his vital principle. Fever and congestion are then discussed in their most general aspects, and he winds up his pathology with an energetic tilt at the humoral pathology, occupying no less than twenty-six closely printed pages. Andral has here the post of honour, and offers many pegs on which to hang a more or less pertinent observation.

We very ardently wish that Dr. Payne could have looked at the medical art and the science of life with the same calm and philosophical eye as this illustrious physician. He has known how to unite deep necroscopic study, minute, almost unrivalled, clinical inquiry, with a due attention to the chemical changes of the fluids, while his American commentator has been only able to grasp one part of his subject.

But we must not leave the impression on our reader's mind that all the errors in this voluminous work spring only from bad reasoning and a half insight into the connexions, causes, and effects of diseased processes. Errors of facts are only less obviously apparent. We will give one example:—

> "There are, probably, but few ordinary morbific agents which affect the skin in its sound state, though some may which are not suspected. Cold is one of the most remarkable. There are but few of the active poisons of the materia medica that either affect this organ sensibly, or other organs sympathetically through it."

There is certainly scarcely one narcotic or sedative remedy which is not capable of affecting the system through the skin. The author admits cantharides, antimony, and, in a partial manner, mercury, to possess such power, but how poor an idea does such an enumeration give of the wide effects of almost every kind of agent, when applied to the skin. But the truth is that, even here, the author's general notion of the powers by which morbific and remedial agents operate upon the system seems to have misled him into error of fact. For such results as those just mentioned could only arise from absorption, and the author highly disapproves of absorption, Magendie, and all observers of this school.

In the extended survey of therapeutics, the author exhibits a full knowledge of the subject in many points of view,

but the taint of his peculiar doctrines is manifest on every page. Thus the physiological effects of medicinal agents on the healthy subject are considered to have but little relation to those brought about in a state of disease. That the modifying effects of disease upon remedies are highly important, is undeniable; but a thorough examination of the former has led to most valuable results, and promises much more in the hands of competent experimenters. It surely is not sufficient to say "that it may be properly known in what respect remedies are remedial; they should be studied in their morbific aspects; studied in their morbific effects upon diseased, not upon healthy conditions." According to Dr. Payne, in the treatment of disease we do but substitute one morbid action for another. Nature does the rest. There is said to be a two-fold difference between the truly morbific and remedial agents. Morbific causes make their deleterious impressions, in a general sense, more profoundly and more permanently. Positive remedial agents, in certain quantities, exert such morbid changes as are not profound, and from which the properties of life may recover, by their inherent tendency, their normal state. Secondly, the two classes of agents not only affect the vital states in different modes, according to the special virtues of each, but each establishes changes according to the existing condition of the vital states. This last difference, so far as it is intelligible, only amounts to the declaration that the two classes of agents are not identical,—that each acts after its kind,—which we shall not dispute. But, in reference to the profoundness of the change effected by morbific agents as specifically characterizing them, we take leave to differ from the writer. A drop of pure hydrocyanic acid kills with such rapidity that he denies *in toto* the possibility of absorption. Surely this is a "profound" effect produced by a remedial agent upon the economy, quicker even in its operation than the most *froudoyant* shock of the worst forms of Algide cholera. As for permanence, some of the metallic poisons seem to affect the system for an almost indefinite length of time. And the author admits that "the most violent poisons are among our best remedies." As for the permanence of morbific causes, the effects of some pass away with a rapidity unknown in materia medica. The impression of cold produces a transient chill, and may end immediately in a sneeze. The typhus odour produces a dire fever in one man, and a fleeting attack of nausea in another. Malarious emanations, so rapidly destructive under certain circumstances, and to certain individuals, under other conditions effect a permanent, but very inconsiderable

modification of the vital functions. The attempt to prove that all remedies act by producing another morbid action fails completely; and the author's opinion upon this point is the more remarkable, as he very inadequately appreciates the real nature and value of actions of substitution or derivation.

There are numerous remedies, of whose *modus operandi* we are too ignorant for us to venture upon a hypothesis of their action upon the diseased body. There are others which cannot be brought under Dr. Payne's law. If a mass of fæces becomes impacted in the colon, some very formidable symptoms are generally superinduced, all of which are safely and expeditiously got rid of by a purgative or an injection. The author would find it difficult to prove that, in either case, a morbid action is substituted for the cause of the disorders.

Dr. Payne is enamoured of the *vis medicatrix*, as we may easily imagine, but he is not satisfied with recognising gratefully the recuperative powers of the economy: he must lug into every discussion of pathological results this almost intelligent agent. Nature, it is observed, resorts to a variety of experiments in carrying out her process of cure. The principle is the same in all cases, and its details illustrate what has been hitherto so obscurely meant by the *vis medicatrix*. Whenever inflammation passes its formative stage, there is always some sensible demonstration of the *modus operandi* of this power. These visible results are of a depletory nature, like redundancies of bile, and consist of lymph, serum, pus, &c. So then we must henceforth believe that the exudation of these materials is not a part of the natural history of inflammation,—not a necessary result of the physical and vital changes of the parts involved, springing up in natural connexion and close sequence,—but the offspring of the *vis medicatrix*. If this be progress, we too must exclaim, with Cayol, that a little more of such progress will conduct medical science to zero, and the medical art to a phantasy. But why, in the name of common sense, does the author place the intervention of his *vis medicatrix* at the precise point when the formation stage is over, and the stage of exudation is about to begin? We presume that the operation of the recuperative agent is quite as manifest at the first blush of vascular excitation in the peritoneum over an ulcerated Peyer's patch, as when the stage of fibrinous effusion has arrived to thicken the membrane, and prevent the escape of the intestinal contents into the neighbouring serous sac. Nay more, for we can understand, and do actually know very much of the relation of the exudation to the previous conditions of the part, and of the relations and changes of the varieties of

exudation matter as regards each other: it is the first step of the process that must ever move our admiration and awe,—which seems to start up, as if with a final cause, direct in view, with the beneficent object of arresting effects which are yet distant. The effusions set up are often of such importance as to demand the interference of art, says Dr. Payne, whose business it is to prevent these "intangible consequences." So contradictory is the attempt to introduce the *vis medicatrix* as a substantial and intelligent principle, that we at last arrive at "intangible" consequences, in the shape of pleuritic effusions, and so forth, which elsewhere the author terms "curative."

We must give, in a few words, an outline of some of the views propounded in these pages. They are eminently original. It is averred that those practitioners who often use tonics and stimulants, have but very imperfect views in physiology and pathology, and are astray from the path of nature, because "there is nothing in the results of spontaneous changes which correspond" with those induced by these agents. Again, "no remedial agents are truly specifics," as mercurials will often fail of curing syphilis, and cinchona may exasperate an intermittent, "while blood-letting, cathartics, &c., will generally remove intermittent inflammation."

Tender allusions of a condemnatory nature are made to homœopathy; but its doctrines in pathology and therapeutics are stated to be "a thousand-fold better, more rational, more consistent, more conducive to health and to life, than any or all the tenets of the chemical and physical schools. With the one there may be a great deal of misapplied philosophy; with the other there is certainly none at all."

Cathartics are said to act by increasing peristaltic action, and increasing the products of the intestinal mucous tissue, their remote effects depending upon modifications of the nervous power corresponding with the nature of the primary impression. Absorption is omitted; and the action of croton oil, when rubbed upon the abdomen, unexplained. But we were fairly overwhelmed when we came to the statement that—"the mere purgative effect, or the evacuation of the fæcal matter, abstractedly considered, is one of the least that is exerted by cathartics." Hamilton might shake in his grave at such a heresy.

Aloes is said to influence the jejunum and ilium far more than the large intestine; and we are told, with a delightful simplicity, that there can be no sound practice till hemorrhagic effusions are recognised as the results of a secreting process.

Dr. Payne plainly fails to comprehend the remedial powers

of narcotics, which are said to be extremely deficient in curative virtues. We may exhibit opium, &c., for the relief of mere spasm of the stomach, to procure rest, &c., where no important acute disease is present; but he who should employ such agents to assuage the pain of pleuritis, enteritis, or any other active form of inflammation, and, in a general sense, in chronic forms, would either most seriously aggravate the disease, or destroy the patient. We have hitherto considered the influence of opium in acute peritonitis, connected or unconnected with perforation, of a highly curative nature. We should be sorry to treat a case without it; and all experience fortifies this view. Opium is, *par excellence*, the abdominal antiphlogistic, and gives the most powerful aid, in conjunction with other remedies, in numerous maladies of an inflammatory nature. This is not a question of authority. Dr. Payne is here opposed to the clinical experieuce of every practical man.

Our author does not know the difference between a direct and an indirect emetic; and is in a state of complete ignorance of the causes of strangury, after the application of a blister of cantharides. In his summary review of the *modus operandi* of remedial agents, he takes occasion to repeat " the most essential points," which are, that the vital principle is a real substantive agent, of which the vital properties, irritability, mobility, &c., are elements superadded to organic beings after the creation of their structure; that the nervous power was superadded only to the animal kingdom; that all organic functions are carried on through their instruments of action, by the four vital properties which are common to all animated beings; that all vital agents, whether stimulant or sedative, whether natural, morbific, or remedial, operate *directly upon these properties*, when the nervous power is not concerned in developing motion or changes. It is affirmed, also, that the fundamental philosophy of disease is perfectly simple, as also that which concerns its cure; that disease is essentially nothing more than a deviation *of the properties of life* from their natural standard, and a consequent corresponding change in the functions over which they preside, and that the artificial cure consists in a restoration of those properties and functions by making upon the former certain impressions which enable them to obey their natural tendency to a state of health. After this we are prepared for the author's view of the action of a seton, which we must give *in extenso*, as it is his " comprehensive example" of his general doctrines, and of the do-nothingness of absorption in particular:—

" A seton passed through the skin of the neck, then, removes inflammation of the eyes. In this instance nothing can possibly enter the circulation, but the whole influence of the seton upon the eyes must be exerted through the medium of the brain and spinal cord. In the first place, the seton establishes an inflammation in the part of the skin in which it is inserted. Here we have the whole interpretation of morbific agents in producing their primary diseases. Like the seton, all others act upon the irritability of parts to which they are applied, alter its nature, and involve the other organic properties in corresponding changes, when a change of function ensues as a consequence, and then may follow a variety of physical results. In reference to the ophthalmic inflammation, the morbid state of the skin operates as a peculiar stimulus, the result of which is transmitted to the cerebro-spinal axis, where it develops and modifies the nervous power, which is then reflected upon various parts. But the intensity of the nervous power thus developed is not sufficient to alter the organic properties of any part, excepting the susceptible ones which conduct the inflammatory affection of the eyes through their instruments of action, and, therefore, no sympathetic disease is produced. But irritability being preternaturally susceptible to the inflamed eyes, the nervous power operates with effect upon it, and alters the nature of that and other properties so as to enable them to return to their natural state, and thus the inflammation subsides. Let us now suppose that the seton is permitted to remain in the neck after it has accomplished the cure of the eyes, until it excites a severe degree of inflammation in the surrounding skin. It may then become the cause of sympathetic disease in remote parts; the patient begins to lose his appetite, the tongue coats, and other marks of a diseased state of the stomach set in. The eyes which had been relieved by the seton again become inflamed. And since nothing can have been absorbed in this case, we must look to the nervous influence for the remote development of disease, as in the former case for the curative results."

It is hardly necessary to point out errors of detail in this statement: such as, that the long preservation of a seton in the neck causes inflammation in the eyes, which is opposed to universal experience. A more important subject of observation is the total abnegation, in the statement, of the principle of substitution or derivation. There are three intelligible modes in which a seton acts for the relief of an inflamed eye, or a chronic brain disorder. The vascular excitement at first set up must have a powerfully revulsive effect upon diseases of neighbouring organs. The subsequent establishment of a pus discharge reacts favourably upon such diseases, as a derivative outflow, on the same principle as thorough and continuous purgation in similar disorders. But again, the artificial

production of a new disease in a neighbouring part probably influences the course of the natural malady on the principle that the economy does not easily support two different morbid processes at one and the same time. The artificial substitution of the one is usually followed by a marked improvement in the other, just as we see so frequently the natural cure of one disease through the medium of the spontaneous formation of another. This, at least, is certain, that the full and long-continued establishment of a discharge is necessary, in most cases, to the curative processes. And so far is it from being true *as a rule*, that such discharge is itself attended with a peculiar series of morbid phenomena, including the exacerbation of the original complaint, as imagined by the author, that one of our chief practical difficulties is the avoidance of the development of a constitutional habit, based on an undesirable over-tolerance of the remedy on the part of the system.

There is an elaborate discussion of the *modus operandi* of blood-letting, the full examination of which would occupy too much of our space. Dr. Payne here out-Herods himself. Our thoughts, we speak in sober seriousness, in reading this portion of his book, partook of the same nature as, and were scarcely less painful than, those experienced on hearing the tale of carnage of the bridge of Magenta, or the tower-capped hill of Solferino. We came with no excessive prepossession against what we felt would be the doctrines of the author in this section, for we are among those who believe that an extreme reaction has taken place against this part of the practice of our ancestors and immediate predecessors, such as is not warranted by a philosophical survey of disease, or by bed-side experience. But this work, if unhappily commonly read in this country, will almost justify such reaction, and tend to retard the recognition of wiser and more moderate doctrines. All the approved bleeders of all times, from Hippocrates to Rush, are set forth in grim array, and seem to our terrified imagination the very ghosts of departed errors,—the blood-stained gods of medical heathendom, whose doubtful laurels were won through much slaughter, —the sign-posts of a *via medica* whose directions are out of date, beyond reason, and fraught with danger. This new avatar of blood-letting is heralded with high enthusiasm. Dr. Payne could not wait until the proper section for its discussion arrived, but, in considering expectorants, he informs us that in pneumonia, we must bleed not only at the beginning, but from time to time, as returning symptoms may suggest, and that by this means we shall constantly make advances upon the disease. Sanguine(!) hopes may be called up by the great relief

which is yielded by the first outlet of blood, but we may be disappointed in a few hours by the recurrence of the formidable signs of inflammation, and we must then bleed again and again. The disease may scarcely falter under the combined effects of blood-letting, leeches, and antimonials; but this is no time for discouragement; we should rather fear that our means have not been applied in sufficient vigour.

"Now is the time, I say, to push the high principles of our noble science, to throw off the trammels of prejudice, and let the blood flow, till, by the relief it brings, we win new trophies for ourselves and for medicine."—p. 642.

We are told that all periods of life are equally under the dominion of blood-letting; that the aged and the infant are particularly benefited by this, the "remedium principale;" and the author avows that he is still apt to think, with Botalli, that "one hundred thousand men perish for the want of blood-letting, or from its not being timely employed, where one perishes from excessive bleeding, when prescribed by a physician."

Here are three of the general conclusions of the writer, who talks of forty years' experience:—That the local, and sometimes the general, abstraction of blood may be remedial when inflammation is induced by excessive blood-letting alone;—that blood-letting may be a remedy for other diseases than inflammation and fever;—that loss of blood is equally safe at all periods of life; is most indispensable, in a general sense, in old age, though not less important in many diseases of infancy.

In the Appendix the author gives us the last test of his sincerity, his own submission to the practice inculcated. The details remind us, though *longo intervallo*, of similar biographical sketches of blood-letting which we have heard from honoured lips in the class-rooms of modern Athens. In March, 1847, he was attacked with "simple pneumonia." The first remedy was the abstraction of two pounds of blood, followed by blue pill and castor-oil. Ten hours afterwards the symptoms recurred, and twenty-four ounces of blood were taken: ipecacuanha and tartarized antimony were now given, but the symptoms having recurred in twelve hours, twelve large leeches were applied, and the "bleeding maintained for several hours;" blue pill was given again, and alteratives were continued, but, the symptoms having again increased, twenty ounces of blood were withdrawn, when the "symptoms vanished entirely." On the ninth day after the last blood-letting he was able to go out. These details occur in the Appendix,

apropos of the discussion of change of type in disease. This the author directly negatives. With him blood-letting was always good, and is good now,—diseases were ever the same as at present, and required the same treatment. Neither, therefore, of the leaders of medical opinion in Edinburgh, who have so vigorously debated these questions, can claim Dr. Payne as a follower. Dr. Bennett might approve of his doctrines, but repudiate his practice. The late Dr. Alison would surely have denied the former, and given a very modified consent to the latter.

We must not tarry longer over this bulky volume. We sincerely trust our American brethren will not believe that we consider it a worthy illustration of the present state of medical science in New York, for we well know the contrary, and wish to limit our censure to the individual, though holding a high office in the University of that city. We can only conclude by observing that, though we respect the learning, the industry, and the obvious truthfulness of the author, it is, however, compulsory upon us to affirm that his writings are not worthy of the present state of science, and are tinged so deeply with prejudices, that the writer becomes confounded and the reader remains unenlightened.

A Treatise upon Penetrating Wounds of the Chest. By PATRICK FRASER, M. D., Knight of the Ancient and Most Noble Order of the Tower and Sword; Holder of the Crimean Medal, and Sebastopol Clasp, and the Turkish War Medal, for services in the Crimea; late Physician Extraordinary to her Most Faithful Majesty Queen Donna Maria of Portugal; late Staff Physician to the Army in the Crimea; Physician to the Royal Literary Fund Society; Physician to the London Dispensary; and Physician to the London Hospital. London: Churchill. 1859. 8vo, pp. 140.

IT is an old law which says that "there is but one step from the sublime to the ridiculous;" and really we can hardly withhold applying this remark to the title-page of Dr. Fraser's book. Pride in its proper place is well enough, but pride permitted to exceed the bounds of reason (we might almost say truth) becomes egregious folly, and as such do we regard this stringing together of titles, real or imaginary, as the case may be. We make the latter remark because Dr. Fraser could have held no special appointment in the Crimea as a Staff Physician to the Army, simply because there was no such grade or position. He served there as one of the ordinary members of the "Civil Ele-

ment," and upon precisely the same terms as to pay and position as every other; but was not in any way, or by any means, placed in a superior capacity to those gentlemen who were doing duty, like him, in the Military Hospitals at Scutari, the Crimea, and elsewhere; and as to being "Holder of the Crimean Medal and Sebastopol Clasp for services in the Crimea," this is all hyperbole. Dr. Fraser received the medal exactly in the same way as everybody else did who was out there, namely, because he had landed before a certain day, and it was not on account of any particular service whatever, as the title-page might lead one unacquainted to infer. His special merits, at all events, were not discovered in the Crimea, or his pretensions to distinction known to those around him. "Old Fraser," as he was familiarly termed, was generally considered a good kind of body, not very likely to set the Thames on fire, or do much benefit or harm; in fact, he placed the latter out of his reach by begging to be allowed to do duty of a kind that would not subject him to the risk of being called upon to perform any capital operation, and in this he was indulged, and cases given to him to treat suited to his nerve and abilities. These cases, Dr. Fraser says, have not been printed in "The Medical and Surgical History of the British Army in the Crimea," and he therefore feels influenced to publish them himself, and thus present them, with observations. Now, upon referring to the work in question, viz., "The Surgical History of the War," we find it explicitly stated at page 324, that the cases of gunshot wounds of the chest which are there published "were not selected with any special reference, other than for their general interest." From this we can only draw one of two deductions, either that Dr. Fraser's cases did not come under the latter category, or that they were (as he himself concludes in his preface) lost.

Dr. Fraser divides his work into sixteen chapters, four of which, according to the table of contents, purport to be devoted to the consideration of the one important point, viz., "the local and general treatment of penetrating wounds of the chest." Here then we expected to find the author's own experience clearly and explicitly set forth, but were disappointed. In place of it we have nothing but a succession of quotations from authors of every kind, medical and surgical writers of every nation and every age, modern and antique. When we tell our readers that, in forty pages we reckoned no less than sixty authorities with references to and extracts from their works, varying in length, and extending in some instances from *one to three pages*, they may conceive how much space can remain

for original observations. We have, therefore, nothing to report upon, and merely conclude our notice of Dr. Fraser's book by the quotation of his two final observations, that from these our readers may judge of the general work, and add it to their library or not, according to the opinions they may entertain as to its utility in practice. The following "physiological summary" Dr. Fraser says, will appropriately close his treatise, viz.:—

"In the human subject, as well as in animals, an actual wound of the substance of the lung is always, sooner or later, mortal, not from the effects of inflammatory action, but in recent cases from a sudden cessation of proper aëration in either the whole or portions of one or two lungs, or sudden hemorrhage.

"That if a bullet or other missile be lodged in the thoracic cavity, and has not caused instant fatal effects, and the wounded man escapes also the secondary dangers, the ball or missile will become encased by a false membrane, and may remain innocuous for years in the human body."

The first aphorism is erroneous—numbers of persons living in perfect health after having been shot through and through the lung. The second is a truism, but one certainly rather too long established to entitle it to be published as the concluding paragraph of a special treatise written in the year 1859.

De Invloed der Zenuwen op de Ontsteking Proefondervindelijk Getoetst. Door H. SNELLEN. Utrecht: P. W. Van de Weijer. 1857.

The Influence of the Nerves on Inflammation, experimentally investigated. By H. SNELLEN. Royal 8vo, pp. 34.

"IN the various theories which have been proposed to explain the process of inflammation, modified nervous action has usually occupied a more or less prominent place. In it the neuro-pathologists seek the essential principle of inflammation. In the paralysis theory[a] the modification is considered to consist in diminished action of the vaso-nerves, which is said to arise antagonistically, in consequence of irritation of the sensory nerves. The spasm theory[b], on the other hand, assigns all value to the constricted state of the vessels, produced by direct

[a] Henle, Allgemeine Anatomie. Leipzig, 1841. Page 512.
[b] Brücke, Archiv für Physiolog. Heilkunde. Bd. x., page 493.

irritation of the vaso-nerves. According to the attraction theory[a], the nerves have only a modifying influence on inflammation, which is itself regarded as an exalted metamorphosis in the tissues, with modified relation between the tissues and the blood.

"After Ludwig had established the direct influence of irritation of the nerves upon glandular secretion, nerve filaments were also sought in the other tissues, under whose influence the exudation might be produced. Thus Spiess[b], in his theory of inflammation, assumes, although quite hypothetically, the existence of filaments in the vascular walls, under the influence of which the serum is supposed to be expelled from the vessels, while an increased formation of fibrine from albumen is said to follow. This view has received important physiological support from the experiments of Axmann[c], which seem to prove that nutrition, as well as glandular secretion, is dependent on the ganglio-spinal nerves, while involuntary contraction is referrible to the ganglio-sympathetic filaments.

"The important discovery of Bernard, that dividing the trunk of the sympathetic in the neck causes paralysis of the vessels of the head, has called forth a series of investigations (Budge, Waller, Schiff, Brown-Séquard, Donders, De Ruiter, Callenfels, Kussmaul, &c.) which have had the effect of throwing much light upon the course of the vaso-nerves, and their influence on the circulation of the blood. It appears to me that these investigations also indicate the way in which the influence of nervous action on the inflammatory process must be studied. I therefore propose to trace, experimentally, the course of the inflammatory process, when some or all the nerves of a part are divided. It is, however, necessary, first, to review the several experiments which exhibit the connexion of the vaso-nerves with the normal circulation, and with nutrition. In these experiments I have directed my attention chiefly to the relation of the vaso-nerves to the sensory nerves."

Such is, in the author's words, the object of the essay before us. In the course of his inquiry, Herr Snellen has performed a series of experiments upon the ear, eye, and foot of the rabbit, of which he sums up the results in the following propositions:—

[a] Virchow, Handbuch der Spec. Path. u. Ther. Bd. i., page 67.

[b] Spiess, zur Lehre der Entzündung. 1854.—Spiess, Path. Physiol. Bd. i., page 147.

[c] Carl Axmann, Beiträge zur microscop. Anat. u. Phys. des Gangliën-Nervensystems. Berlin, 1853.

"1. Irritation of the sensory nerves produces, as a reflex phenomenon, exalted action of the vaso-nerves in the same part of the body.

"2. In the constriction of the vessels, which is produced by temporarily exalted action of the vaso-nerves, lies the source of subsequent dilatation of the same vessels.

"3. There is no reason for assuming, in the vascular wall, any other than vaso-constricting nerve-filaments.

"4. The vaso-nerves modify the metamorphosis of tissue, by determining the caliber of the vessels.

"5. The inflammatory process does not essentially consist in a modification of the nervous energy.

"6. The inflammation of the cornea, which ensues upon division of the trigeminus, is wholly of a traumatic nature, and by no means proves the nutritive influence of the Gasserian ganglion."

A Digest of the Vital Statistics of the European and Native Armies in India; interspersed with Suggestions for the Eradication and Mitigation of the preventible and avoidable Causes of Sickness and Mortality amongst imported and indigenous Troops. By Joseph Ewart, M. D., Bengal Medical Service. London: Smith and Elder. 1859. 8vo, pp. 182.

It was our duty a short time since to bring before the notice of our readers a work by Dr. Julius Jeffreys, upon "The Preservation of the British Army in India, by an appropriate clothing, housing, and locating, recreative employment, and hopeful encouragement of the Troops," a practical and very valuable book: to-day we have to record the issue from the press of a somewhat similar production, differently written, and most elaborately compiled,—a perfect epitome of statistics illustrative of the sickness and mortality of our armies in India. Some idea may be formed of the mass of evidence waded through by the author, and reduced into form, from the mention of the fact that in 182 pages no fewer than 79 tables present themselves, some of them of a kind that those only familiar with the labour of compiling details of this description can comprehend. We hail with pleasure the publication of each work of this description, because it tends to show that the mind of the profession in India is directed more and more to the consideration of the preventibility of disease amongst the guardians of our Eastern possessions. Whether in peace time or in

war, this we hold to be the grand and all-important aim. We know from experience what the future of those who have suffered from the destructive effects of inter-tropical disease usually is, and how deteriorated is the constitution of each who has even once succumbed to the fevers of the plains, with their visceral complications. Whilst saying this, we do not in any way wish to detract from the value of works written upon the cure of these too fatal maladies, but merely to state, and state strongly, our conviction that the duty as well as the interest of the Government, both in this country and in India, is to give the fullest attention to the consideration of all measures calculated for the preservation of life. We believe that there is no exaggeration in the statements first made by Dr. Ranald Martin, and followed up by Drs. Jeffreys and Ewart, that the mortality of our troops in India is capable of being most materially reduced if but ordinary attention is given to the removal of the exciting causes. Already have martinet obstinacy and military pig-headedness been made to succumb to the bidding of reason and common sense. We hear no more of pipe-clayed individuals being permitted to practise such vagaries as acclimatizing troops by drilling them in the sun; or, child-like, cherishing the idea that they were keeping up military discipline by condemning their men to support life to the last in the wearing of a form of dress calculated only (and even there unfitted) for use in a European climate. All this is over: cambric tunics and turbans have superseded coatees and shakoes upon service, and the husbanding, instead of expenditure of life, has been inculcated upon commanding officers by the issue of general orders that they themselves are forced to obey. So far, the soldier's existence has, to a certain extent, received protection, but the main point, viz., that of removing him from terrestrial influence, has not yet been acted upon. Both the works alluded to above advocate the selection for the troops of residences whose natural position is favourable to the maintenance of health. The vital importance of finding out localities salubrious and suitable for Europeans cannot well be over-rated:—

"For it may be laid down as a law that our military power in India will increase in the direct ratio of the increase of the available European population. And that this will increase with the greater salubrity of our stations, and the country generally, is clear. . . . .

"That a very considerable saving of lives can be effected in this manner is evident from the subjoined tabular statement, which shows the ratios of sickness and mortality at the different stations noted therein, amongst the Queen's and Company's European troops:—

BENGAL.

Stations.	Periods of Observation.	Treated per 100 of Strength.	Deaths per 100 of Strength.
	Years.		
Rawul Pindee,	6 ending 1854–5	182·00	2·76
Jullunder,	9 „ 1854-5[a]	163·77	2·86
Dugshai,	5 „ 1854–5	177·28	2·98
Kussowlie,	11 „ 1854–5[a]	165·86	4·12
Meerut,	9 „ 1852–3	207·59	4·12
Benares,	9 „ 1852–3	222·00	4·22
Agra,	9 „ 1852–3[a]	210·38	5·04
Chinsurah,	1826–7, and 7 ending 1837	141·29	5·08
Dum-Dum,	9 „ 1852–3[a]	202·34	5·40
Subathoo,	11 „ 1854–5[a]	178·86	5·91
Umballah,	11 „ 1855[a]	195·12	6·07
Dinapore,	9 „ 1852–3[a]	189 00	6·20
Ferozepore,	11 „ 1854–5[a]	217·51	6·34
Peshawur,	6 „ 1854–5[a]	351·92	6·51
Berhampore,	1823, and 9 ending 1834	200·01	6·88
Fort William,	9 „ 1852–3	187·50	7·00
Lahore,	9 „ 1854–5	273·79	7·54
Cawnpore,	9 „ 1852–3	267·95	7·82

[a] The year 1849-50 not included.

BOMBAY.

Kolapore,	20 ending 1849	300·34	2·05
Sholapore,	„ „	226·95	2·22
Kirkee,	„ „	177·34	2·64
Belgaum,	„ „	172·74	2·75
Punjaub Army,	„ „	197·82	2·89
Aden,	„ „	137·98	2·99
Deesa,	„ „	171·82	3·40
Ahmednuggur,	„ „	233·15	3·45
Bhooj,	„ „	209·99	3·83
Poona,	„ „	230·33	4·11
Kanark,	„ „	100·07	4·37
Mhow,	„ „	182·54	4·97
Indus Army,	„ „	155·56	7·36
Kurrachee,	„ „	208·43	9·02
Bombay and Colaba,	„ „	254·16	10·92
Hydrabad and Scinde,	„ „	369·48	23·52

"These figures are sufficient to show how many valuable lives may be saved by selecting the healthiest stations."

The work of Dr. Ewart does not pretend to originality. It is better, because facts are its foundation, and not theories, and

the ideas contained in it go only to the demonstration of the good to be effected by the adoption of measures which experience has proved to be necessary and correct. Dr. Ewart has constructed his book principally from the Bombay, Bengal, and Madras statistical returns, and the writings of Drs. Waring, Macpherson, Webb, and Moorehead,—names well known to those familiar with Indian literature,—and other acknowledged sources. In his preface he thus briefly and honestly describes his efforts, saying:—

"With such a rich supply of scattered and disconnected information, bearing most intimately upon the past and present conditions of the European and native troops of India, the author has only had to undergo the labour of collecting an important series of data, and of arranging them in such a manner as to unite comprehensiveness with simplicity and uniformity of design. In endeavouring to accomplish these objects, he ventures to hope that, though he may not have contributed anything positively original, he has, nevertheless, furnished an accessible and tangible desideratum to the medico-statistical literature of the East Indies."

Dr. Ewart has certainly done so. He has produced a book that all connected with India should read, more especially those in office, who have it in their power to carry into effect measures which policy as well as humanity most unquestionably dictates. We recommend a perusal of this work.

Gooch on some of the most important Diseases peculiar to Women; with other Papers. Prefatory Essay by Robert Ferguson, M. D., F. R. C. P., Physician Extraordinary to the Queen; Consulting Physician to King's College Hospital, &c. London: The New Sydenham Society. 1859. 8vo, pp. 235. Illustrated by woodcuts.

This is virtually a third edition of the eminently practical and useful work of the late Dr. Gooch; the Prefatory Essay of Dr. Ferguson serving to indicate the progress made in the various subjects discussed since the original publication of the book. It is not usual to review, at any length, a work that has attained a third edition; in the present instance it is not necessary, for the writings of Dr. Gooch need no commendation at our hands; we cannot, however, deny ourselves the pleasure of congratulating the profession on having such a work again placed in their hands, and of again adding our meed of praise to the New Sydenham Society for the course they are pursuing. The benefit to be derived from the circulation of such a book

as this arises not only from the soundness of its teaching, but, in a much greater degree, from the example it affords of *earnest* inquiry, of calm investigation, and of ready acceptance of the conclusions arrived at. To all, these lessons must be useful. The difficulties of breaking through routine habits of thought and of practice are immense. The danger of rashness is great, the temptation to be apathetic and indifferent, or one-sided, is still greater. In the example of Gooch, we see how these difficulties are to be overcome, and the dangers to be avoided. The readers of his Essay on Puerperal Fever, especially, will, we hope, bear the lesson in mind; for, changed in type as he found the disease, it has changed since he wrote, and shows a tendency to undergo a still further change, so that, more than ever, each case requires to be considered by itself and for itself.

The subjects treated of in the several chapters are:—1. Puerperal fever; 2. Puerperal mania, with thoughts on insanity, as an object of moral science; 3. The signs of pregnancy; 4. Polypus of the uterus; 5. Irritable uterus; 6. On some symptoms in children erroneously attributed to congestion of the brain; 7. Is the plague a contagious disease? The reasons that induced the Society to republish the work are thus stated by Dr. Ferguson in his Prefatory Essay:—

"Except where the highest principles are concerned, a decade makes the mass of scientific discoveries and opinions old. What is enunciated as, and proved to be, a truth, is rapidly absorbed into the sum of truths already secured; the labour of a life is crushed into a formula which, in proportion as it becomes current and useful, ceases to be instructive: all those fine processes by means of which the ore was extracted and minted are laid aside and forgotten. Thus it has been with the opinions of Gooch, which, by clearing away the obscurities of the subjects he has discussed, have imparted so much certainty to thought and action that we have almost ceased to be conscious of the daylight he shed on them, by reason of the very largeness and commonness of its diffusion. I conceive, therefore, that this Society has done well in putting into the hands of the student this volume, which will enable him to mark, and if possible appropriate, the methods by which a mind like Gooch's worked; thus affording him the occasion by which he in his own day may learn to co-ordinate and transmit his own experience for the benefit of others."

The general character of the book is summed up as follows, an estimate in which we fully concur:—

"The general features of the work are its pre-eminently practical character, its manly tone, devoid of trash and frippery, an

ardent love of truth, a dislike of all confident assertions, an abhorrence of all means which prostitute knowledge to notoriety or to gain.

"It is this love of truth, this necessity for clear conceptions, which make the methods adopted by Gooch in the treatment of any subject so instructive. The whole is presented to us in so lucid a form, its parts so well proportioned, that the laws by which it was developed in the master's mind run the hazard of escaping the attention of the student."

The Prefatory Essay of Dr. Ferguson forms an able and useful commentary on the several chapters. In speaking of the signs of pregnancy, the following graceful tribute is paid to the Dublin School, which, coming from the London School, and from one of Dr. Ferguson's eminence, is too gratifying to be omitted:—

"Gooch's chapter on the signs of pregnancy is as compact, clear, and practical as possible. The additions made to this subject, since it was written, are:—1. Signs derived from auscultation; 2. Signs indicated by certain chemical changes in the fluids. The latter are not of much value, and the reader will find that value discussed in Dr. Montgomery's able work on the history of Pregnancy with the sobriety and fulness which seem characteristics of the Dublin School; the works emanating from which have most deservedly placed it second to none in Europe for largeness of view and practical instruction."

A Treatise on Syphilis in New-Born Children and Infants at the Breast. By P. Diday, Surgeon to the Hospital de L'Antiquaile, Lyons. Translated by G. Whitley, M.D. London: The New Sydenham Society. 1859. Pp. 272.

Much has been written on syphilis; from the goodly-sized tome down to the modest, unassuming pamphlet, enough has been issued from the press to fill any of our largest libraries, and yet much remains to be written on this self-same subject, largely as it appears to have been discussed. And still the disease appears to be unexhausted and inexhaustible. A writer appears on the stage who seems to have probed its history in every direction to its uttermost depths, and yet, Antæus-like, it emerges from this searching examination with renewed vigour, presenting other phases, calling for the labours and researches of another generation of authors; new facts are elicited, new theories broached, and still we seem as far as ever from the desired goal. Much good service has been rendered in the

cause; but, as we have stated before, the subject is not exhausted; and we may go a step further and state that, in our opinion, it is inexhaustible.

For the work before us we are indebted to the enterprise of a Society recently founded on the model of one which has already done good service to the cause of medical science, by the reproduction of some of the most important and valuable contributions to the literature of our profession; and, in starting with the work at present under consideration, we must state it as our opinion, that the New Sydenham Society here has given us good earnest of the future volumes that they propose to give their subscribers; for we must unhesitatingly rank this work of M. Diday's amongst the most important that has issued from the press of any country for many years past. Without further preface then, we shall endeavour to give our readers some idea of the task undertaken by its learned author, and the manner in which he has executed it.

M. Diday, Surgeon to the Hospital de L'Antiquaile, in Lyons, originally produced his work in the French language, and has been fortunate in securing the good offices of an able translator, in the person of Dr. Whitley, who has evidently brought to his task a thorough knowledge of the language in which the author originally wrote, and a fine literary taste, leaving his readers nothing further to wish for in these respects. The work itself is divided into five parts, each part divided into chapters in which the special subjects of each part are fully investigated. The first part embraces the etiology of infantile syphilis; the second, the description; the third, the prognosis; the fourth, the medico-legal bearings; and the fifth, the treatment of this most important disease. The whole is preceded by an introduction, in which M. Diday indicates the objects that he had in view in undertaking the work, and explains its plan; and, in addition, the author favours us with a preface to the English translation, in which he pays a handsome, but, at the same time well-merited, tribute, to the specialist writers of Great Britain, to whom he acknowledges the obligations he is under for the theoretic generalizations and clinical records, in which his work is so rich.

That this tribute to the labours of the specialist writers of Great Britain is but what they merit, we willingly acknowledge; and we are proud to have it in our power to claim for Irish literature more than its fair proportion in the share it has contributed to this department of medical science: the names of Ally, Moriarty, Wallace, Hewson, Beatty, Carmichael, and Colles in former days, and, in our own times, Egan, Labatt (to

whose valuable work we shall have occasion further on in these remarks again to refer), and Porter, with many others, fully justify this statement. Any one at all conversant with the literature of our profession must acknowledge the great boons conferred on humanity by the labours of these writers, and must gladly recognise the light, which, on a confessedly obscure subject,—the improvements effected in the treatment of a disease acknowledged amongst the most formidable, and in its results the most painful, that the human subject is liable,—has been thrown by their pens; and we feel that we would be guilty of great injustice to one who has already distinguished himself in other branches of our profession, and, at the same time, be doing our readers a positive disservice, did we not here, publicly, acknowledge the deep debt due to Professor Porter by our professional brethren, for his most instructive, and, at the same time, most classical essays on this subject, which so recently appeared from his pen in the pages of this Journal; essays that evince, on the part of the writer, consummate ability, sound judgment, and rare powers of philosophical investigation; essays that hereafter must hold the highest position in the estimation of subsequent writers on the subject, and without a perusal and study of which, no person should venture to express an opinion on the difficult subject of which they treat.

M. Diday commences his work with a short historical resumè of the subject,—an introduction far too short, in our minds, to do adequate justice to the memories of those who had successfully laboured in this department. It would have been fairer either to have omitted it altogether, or to have extended it to such a length as to permit of his having referred more in detail to the share which each person had contributed in establishing the facts, on which his own valuable superstructure has been erected. We allude here, more especially, to the share taken by the late Dr. Beatty, of this city, in establishing, incontestibly, the important influences exercised by diseased parents over their offspring. Other writers had preceded him in making allusions to the subject; but we feel that the just merit is due to him of reducing these scattered facts to the elucidation of a great law, the truth of which is now universally acknowledged, and therefore we feel ourselves justified in asserting that no bibliography of the subject can be considered as complete where his name has been omitted.

The next subject which engages his attention is the period at and the manner in which infection can be communicated to the yet unborn child; and the first problem which he considers

is, whether the father alone being syphilitic, can he communicate the disease to the child? This question, in our opinion, the author has properly answered in the affirmative. He quotes many cases to support his views; and at the present moment one occurs to our own mind, where a young gentleman who had contracted syphilis many years ago had secondary symptoms, and, believing himself to be cured, married, has had two decidedly syphilitic children, without the wife manifesting any constitutional symptoms whatsoever. That such cases are rare, we are free to admit; but that they do occur, we must agree with M. Diday.

The next problem is to this effect—Will a man who has had syphilis, but who presents no symptoms of the disease at the moment, beget a syphilitic child? This, which is one of the most important problems in the entire work, inasmuch as it involves the grand question of whether the recently diseased man, now apparently cured, is justified in contracting a matrimonial alliance, has scarcely had that justice done it that its importance demands, or that the great ability manifested by the author in other parts of his work would lead us to expect. In no other question in the book is involved so much of the happiness of families or of the character of the physician; and one of the cases used to illustrate his views on the subject we shall have to claim hereafter in support of some ideas of our own, with the truth of which we have been long impressed, and which in the course of this review we shall venture to lay before our readers. In considering this problem he also introduces the consideration of another—one first started by Hunter, and since his time entertained by other authors, viz., whether a man who is affected by syphilis, and has connexion with a pregnant woman, can communicate the disease directly to the fœtus, without infecting the mother? This question M. Diday seems inclined to answer in the affirmative; and he supports his views by a case which he quotes from M. Albers, where a man affected with primary syphilis had connexion with his wife in the seventh month of her pregnancy. She escaped infection, but at the full time gave birth to a syphilitic child.

The influence of the mother is considered under two heads: first, as it affects the future offspring when the mother is infected before conception; second, after conception. The first of these sources of disease is so generally recognised and admitted, that we could anticipate but little new here; and yet the author has supplied us with much that is not only interesting, but also most important for us to study and to know. To establish the truth of this position, M. Diday goes far beyond

what is generally considered necessary to prove his views. He is not satisfied with those cases where a woman who has been infected by her first husband, becoming a widow, marries a second husband free from syphilitic taint, and to him bears syphilitic children. As in these cases the disease may be attributed to the influence of the first husband remaining in the organism of the wife. No; he goes further: he takes the case of a woman infected through the medium of a diseased nurseling, proving pregnant to her husband, free from all suspicion of such disease, and having a syphilitic child. Many of such unfortunate cases are recorded; and thus is unequivocally established the fact that such can take place; and the infection is thus clearly traced home to the influence of the diseased mother alone.

The question of the influence of the mother when infected after conception is most properly summed up in a few words; as, now-a-days, we believe that no person whose opinion would have any weight is to be found questioning its materiality. But the question, "Up to what period of pregnancy can syphilis, then first contracted by the mother, be communicated to the fœtus?" is fully entered on. Two distinct stages are considered: the first involving the earlier; the second, the later periods of pregnancy. In considering the first of these two conditions, the author expresses himself as being of opinion that if a woman, within a few days after conception, contracted syphilis, and was speedily cured, the child subsequently born would not show any symptoms of the disease. True, that he only states this as a speculative opinion, unsupported by any facts; and it is a case not likely ever to be submitted to the *experimentum crucis*. Still, granting that such a case arose, we cannot see what it proves. According to the received opinions, the ovum, though impregnated, is still an absolute portion of the mother's existence, dependent on it for support to the very fullest extent as much as one of her cervical or inguinal glands, and possessed as yet of no independent vitality. Why should it be more exempt from the curative influence of remedial agents than either of the said glands? These, however, are but speculative questions; that in relation to the later periods of pregnancy unfortunately is not so; and M. Diday, in our opinion, has erred here, in giving his adherence to the views of the learned Ricord, in stating that the last three months of pregnancy are more or less exempt from such influences. In our opinion they are not so. Numerous cases with which we are familiar justify us in expressing this opinion; but we prefer adducing one of the cases that he brings forward

to support his view, to substantiate that which we are inclined to look on as the more correct solution of the problem. We allude to his own case of Madame B., who was infected in the *seventh* month of pregnancy, and gave birth, at the full period, to an infected child, which, in spite of most active treatment, died at the end of five months, of unmistakeable specific disease.

In the third section of this chapter we have discussed the effect produced on the offspring by the combined influence of both parents being diseased. This hitherto has been summarily disposed of by the dictum that in this case the fœtus has no chance of escaping infection. To this sweeping condemnation M. Diday has, in our opinion, most properly taken many exceptions. The question of the immunity conferred by one healthy parent, as originally started by Ricord, is fairly considered; but the point to which we would more particularly wish to direct our readers' attention, and indeed that of M. Diday, is involved in one brief sentence. When talking of the curious fact that it has long been observed that in a family where one only of the parents is syphilitic, all the children are not born with the disease, he expresses himself in these terms:—"Is it that at the moment of conception the diathesis slumbered in the individual in question? or is it rather that the influence of the healthy individual corrected the morbific influence inherent in the other?" This is, in our opinion, one of the most important problems connected with this very obscure disease,—one on which, long before M. Diday had written these lines, we had reflected profoundly: and to the solution of which we have felt ourselves irresistibly impelled by many facts to venture to offer an explanation hitherto, as far as we know, new to our profession. Some years past we ventured to propound them to Professor Faye; and, encouraged by his opinion, again and again have we sought for and obtained proof confirmatory of the opinion that it does slumber, and that the very condition hypothetically put forward by M. Diday has truth for its foundation, and that this disease, like many others, is intermittent in its type.

The first case that suggested this idea to our minds occurred many years ago: a man in a respectable walk of life consulted us about some syphilitic symptoms that he had, of tertiary character; in the conversation, it came out that his wife had had repeated miscarriages, and that she was now in her seventh month of pregnancy, and that they both feared a similar termination to this pregnancy. In compliance with our request,

she was brought to us, and, on representation, agreed to go under mercury; but to no use, as she had, at the full period, a putrid child. Both parents were now put under an efficient course of mercury, kept separate beds (the actual position of affairs having been placed fairly before them), and after a three months' persistence in this plan of treatment, were allowed to resume conjugal relations,—the result of which was, in due course, a healthy child, which continues so to this day (now nearly six years). Subsequently, the woman again proves pregnant, has a putrid child, and again proves pregnant, and has a baby that, as far as appearances go, is perfectly free from syphilic taint, and one of the healthiest children that could be found any where. In the case of the first healthy child, the protective influence of the mercury may be alleged; but in the subsequent cases, where no mercury had been given, how are the facts to be explained? besides which, both parties had been treated, before they came under our care, by a most experienced surgeon, who on previous occasions had mercurialized them, and still they had pocky children. We confess that this case made a profound impression on us. Again, we had under our care a gentleman who some fourteen years ago contracted venereal, and in whose case the sequelæ were of the most inveterate and melancholy character. As the result of sexual congress he had two children,—one healthy, the other pocky; and between the periods of his successive attacks his health was of the most desirable character. Other cases we might instance; but we feel that if these do not convey and substantiate our view, further narration would be useless. We have great pleasure, however, in being able to support them by some observations of Mr. H. Labatt, in his most valuable work on Venereal Diseases; in it we find the following remarkable passage bearing on our views, and for the reproduction of which we feel that no apology is due to our readers:—

"It usually occurs that when a series of miscarriages and births of children, who subsequently display syphilitic symptoms, takes place in the instance of the same mother, each case presents the disease in a more mitigated form than the previous one. This, however, is not always so. We have reason even to suppose that in the course of these accidents an interruption, as it were, may take place in the manifestation of these morbid phenomena, and the disease reappear at subsequent births without any assignable cause. The following case will illustrate this; I found it amongst the papers of my late father, whose long and distinguished professional career does not require my

feeble eulogy. The case is also interesting as setting forth the views of a late most eminent surgeon who was called in for consultation :—

"'In the summer of 1805 I attended during her confinement the wife of a respectable shopkeeper, when she gave birth to a full-grown, healthy-looking child, which appeared to thrive on the mother's nursing for ten or eleven days. I then ceased to attend, leaving both in good health apparently. In a few days after, the nursetender called to inform me that the lady became very unhappy, as the child had been very ill since my last visit with a bowel complaint, and 'an ugly red gum,' as she called it. I was greatly struck with the appearance of the child. I had left it a very few days before, a healthy, ruddy, and well-nourished child, as I thought, and now found it greatly emaciated, pale, languid, with a hoarse squeaking cry, and very restless. I observed also copper-coloured blotches over the parts about the genitals. Apprehending that those appearances were from a syphilitic taint, I requested that a surgeon should be immediately called in to see the child, and Mr. Solomon Richards, on seeing the case, confirmed my suspicions. The poor little sufferer died in a few days. The father told me that he had syphilis two years before marriage; but, having undergone a course of mercury, he was pronounced sound by a skilful surgeon. I requested another meeting with Mr. Richards, to take into consideration the propriety of submitting the parties to a course of mercury. Mr. Richards, however, being unable to detect any trace of syphilis in either, objected to mercury, saying that 'latent syphilis,' as he termed it, would not be eradicated by mercury. The lady soon became pregnant again, and about the seventh month was seized with labour without any apparent cause, and was delivered of a putrid child. On this occasion I urged the necessity of a mercurial course, but it was resisted on the authority of Mr. Richards, who had previously stated that he had known some cases of the kind, in which the venereal taint had worn itself out, and the parents afterwards had healthy children, without the aid of medicine; and his prediction was verified in this case, for the lady, although she gave birth to four pocky children, had the good fortune to bring forth five healthy ones. Of nine pregnancies, the result of the first and second I have mentioned; the third was an early miscarriage; the fourth and fifth arrived at the full time; the infants were born alive, and never exhibited any appearance of disease; the sixth was delivered dead and putrid in the country at the sixth or seventh month; the seventh, eighth, and ninth were born alive, and

went through the periods of infancy and boyhood free from any trace of disease.'"

That this view, which we venture here to put forward, is the true explanation of the case of Mr. D., recorded in page 17 of M. Diday's work, is our deliberate opinion.

Many other of the etiological points in M. Diday's work we would wish more particularly to allude to, but the limits which have been assigned to this article warn us to hurry on. We would wish, however, particularly to draw the reader's attention to that portion of the work in which he treats of the medico-legal bearings of the subject; these concern every medical man who has a character to sustain, and who would wish to acquit himself with credit, under some of the most trying conditions in which he may be placed. We most cordially recommend them to the careful perusal of every one who desires to uphold his own position, and that of the profession to which he belongs. One passage we must extract for our readers' perusal and benefit, as bearing on more than the question at issue; in giving evidence in a court of law, we have long felt it to be a monstrous doctrine that the "expert" should be constrained into giving a simple answer in the negative or affirmative to the question asked. We agree with M. Diday that he should be more regarded in the light of a medical judge than of a witness, perfectly unbiassed on either side,—as the medical witness, who respects himself and the profession to which he has the honour to belong, ought to be, whose opinion should be regarded more in the light of a judgment than of evidence. How difficult it is to explain to the *profanum vulgus* the data on which we ground this opinion,—the result, probably, having been arrived at by a life time of slavery devoted to the subject,—no one can be more keenly alive to than the medical witness; it has taken him years of observation to arrive at the instinctive knowledge, the power of appreciating (when summed together) "trifles light as air," as being confirmation "strong as proof of Holy Writ;" and yet he is expected to leave all this important evidence, conclusive to an educated one, to be decided upon by the unaided powers of a mind, acute, indeed, in other respects, but feeble as a child's in coming to a proper conclusion on the case under consideration. These are the remarks to which we refer:—

"But if the obligation to be truthful be not a duty of which it is very necesssary to remind medical men worthy of that name, there is another which the law imposes on them, and which they are only too much inclined to elude; I mean the obligation of expressing to the magistrates their opinion, such as they have formed it for them-

selves from the investigation of all the *pathological* circumstances of the facts of the case. Many experts are content to enumerate the elements upon which the conviction of the tribunal may be founded, and leave to it the duty of drawing the necessary conclusions. 'Their mission, they say, is to enlighten the judges, not to put themselves in their place.' They thus escape the embarrassment into which they are brought in these cases by the difficulty of the scientific problem and the influence of their relations with their patients.

"This is not the view which I take of the duties of the medical man. Justice does not call him in merely as a witness. By associating him with herself as an adviser, she transfers to him a portion of her attributes. She gives into our hands some part of that sacred mandate which commands respect for her decrees, and insures for her researches the aid of all well-disposed persons. We are bound, then, to communicate without reserve all that may facilitate her legitimate endeavours to ascertain the truth.

"But if we are consulted, it is not for the purpose of diagnosing syphilitic lesions; nor to decide whether they have commenced earlier in the child or in the nurse; nor to rake up the antecedents of one party or the other; nor to decide whether a given symptom was transmissible or not, at a given period, &c. These points are no doubt of importance; but, in the first place, some of them require only a purely material verification. Then, of those which are of more weight to decide the point at issue in any way, there is not one, as we have just seen, to which a different interpretation (which each theory vies in declaring to be the only true one) may not very frequently impart an opposite character.

"Is it for the magistrate to thread this labyrinth of hypotheses? Is it his duty—an observed fact and a simple possibility being given—to estimate the amount of probability to be assigned to each, in the midst of the obscurities of scientific controversy, and the exaggerations of opposed pleadings? No; this task falls upon the medical man—first, because it is intrusted to him, and further because he is the sole person capable of performing it well. By declining it, wholly or in part, he would betray the ends both of justice and of science; for he would refuse the first the means of repairing an injury, and the second would certainly lose in consideration of his reserve, which would be stigmatised, at the least, as incapacity, if not as reprehensible calculation.

"I do not wish to deprive the expert, on that account, of the right of doubting and of expressing his doubts plainly, when the details of the case have not enabled him to form a decided opinion *pro* or *contra*. But I wish to remind him that, whether uncertain or fixed, favourable to the parents or the nurse, appealing to the future or affirmative already, his view, whatever it may be, belongs to justice and ought to be made known to the tribunal. Van Swieten has written: 'Ut famæ ægrotantium consuletur, videntur medici, prudenti consilio, hanc causam tanquam probabilem in medio relinquisse. Sufficit enim medico luem presentem cognoscere et cog-

nitam curare.' I protest against such a programme of the duties of the medical man, if it were wished to make it his rule of conduct in a court of justice; and I conclude by declaring that, whenever his opinion is asked judicially in a similar case, he ought to give the judges who interrogate him, not only the reasons upon which any opinion of his may be based, but also his personal opinion, as explicitly as as it has been formed in his own mind."

Under the head of treatment, M. Diday gives his opinion as to the manner in which the examination of a wet nurse should be conducted. This is a most important subject,—the careful examination of the person who is to usurp the duties of the mother, following, as a necessary corollary, to what has appeared in the previous pages; the fact being undoubted, that, in a variety of ways, infection can be communicated to a previously healthy child, from a disordered nurse, a grave responsibility falls on the medical man who sanctions her employment; and equally grave must be the censure to which he is liable, should the infant contract disease from the source to which he was to look for health and security. These are M. Diday's views:—

"A child born healthy, of healthy parents, cannot, I will assume, be suckled by its mother. How are we to proceed to prevent the nurse to whom it is intrusted from communicating the venereal disease to it?

"This danger, it must be confessed, is not sufficiently taken into account by people of the world. In spite of repeated distressing occurrences, the medical man is much too rarely asked to give an opinion as to the *special* state of health in the nurse. Satisfied with her good looks, her simplicity, which is sometimes affected, and the rusticity of her accompaniments, the father intrusts the fate of his child to her without inquiry; and of the questions addressed to her concerning her antecedents, the most important is certainly the last to be thought of.

"The reserve of families on this point is further sufficiently explained by a very natural feeling of delicacy. But what is to be said of the medical man (and there are many such) who omits to include in the examination required of him, the careful inspection of the genital organs of the future nurse? It is, in my opinion, an unpardonable omission: no extraneous consideration, no certificate of morality, should exempt the woman from this ordeal; and one who took offence at finding herself subjected to it would be precisely one in whom I should carry it out with the most distrust and with the greatest care. On exploring the vulva and neck of the womb, the anus, the groins, the nape of the neck, and the back of the mouth, accusatory signs or vestiges of a past or present infection will sometimes be found, and their absence, if verified, will, on the contrary,

be one of the most reassuring guarantees for the future of her foster-child. But these are not all the precautions required, and we must be careful not to draw too hasty a conclusion."

The views so ably put forward by Professor Porter in his admirable essays already alluded to in this article, as to the propriety of employing mercury in the treatment of syphilis in patients with the strumous diathesis, are fully borne out by M. Diday,—indeed, the language employed by both these distinguished authors is almost so identical, that we should have imagined them to have appeared from the same pen, and not to have been written by authors in different countries, independently of each other. Having had the great advantage of following Professor Porter's clinique, we are in a position to verify his statements in those particulars, and it is gratifying to us to find his opinions on this *quæstio vexatio* supported by so able an authority as M. Diday.

In the appendix to the work we find some few formularies given us, more, we should imagine, with a view to indicate the ingredients contained in formularies not generally known to the profession, than with any idea of furnishing us with a complete repertoire of infantile syphilitic therapeutics. That this was the intention of the author, we take for granted; otherwise it would have become our unpleasant duty to comment upon them in no measured terms.

In conclusion we have this pleasing duty to discharge, to recommend M. Diday's work to our readers' notice, as being by far the very best work on its subject it has ever been our good fortune to meet with; to congratulate the Society on its very happy selection of the book with which it has made its debut; and to felicitate both the author and the Council of the Society on the very able translator they were fortunate enough to obtain in the person of Dr. Whitley.

The Surgeon's Vade Mecum: a Manual of Modern Surgery. By ROBERT DRUITT, Licentiate of the Royal College of Physicians of London, &c. London: Renshaw and Churchill, 1859. Eighth Edition. Much improved, and illustrated by 328 highly finished Wood Engravings. Fcap. 8vo, pp. 791.

WE cannot refrain from calling the attention of our readers to the publication, just as we were going to press, of this new edition of Dr. Druitt's most excellent treatise on Surgery. Unlike

the majority of authors whose books have gone through many editions, he is not satisfied with issuing merely a reprint of the volume, but he has carefully revised the whole, and made numerous additions of much importance. For example, a new chapter on Inflammation has been added; that on Gun-shot Wounds has been written afresh, from the experience of our military surgeons in the late wars; that on the Eye has been most carefully revised by Mr. Haynes Walton; and in the chapter on the Excision of Joints the information is of the latest, due justice being awarded to our own able contributor, Mr. Butcher. In a word, this eighth edition of Dr. Druitt's Manual of Surgery is all that the surgical student or practitioner could desire.

A System of Surgery, Pathological, Diagnostic, Therapeutic, and Operative. By Samuel D. Gross, M. D., Professor of Surgery in the Jefferson Medical College of Philadelphia, &c. Illustrated by 936 Engravings. Philadelphia: Blanchard and Lea, 1859. 2 vols. 8vo, pp. 1162 and 1198.

Certainly our American brethren are fast wiping off the reproach under which they so long laboured, of having no medical literature of their own; and if we are to judge, not alone from the number, but from the *size* of the books which have recently issued from the United States press, we may reasonably hope that ere long they will leave no room on their library shelves for reprints of our publications: and thus what we have always regarded as a great disgrace and reproach to the medical profession at the other side of the Atlantic—an opinion in which we know that the author of the two splendid volumes now before us concurs—will be removed. Of Dr. Gross' treatise on Surgery we can say no more than that it is the most elaborate and complete work on this branch of the healing art which has ever been published in any country. A systematic work, it admits of no analytical review; but, did our space permit, we should gladly give some extracts from it, to enable our readers to judge of the classical style of the author, and the exhausting way in which each subject is treated.

PART III.

MEDICAL MISCELLANY.

TRANSACTIONS OF THE BELFAST MEDICAL SOCIETY.

SESSION 1858–59.

(*Continued from* vol. xxv. p. 485.)

February 7, 1859.

Mr. Browne, R. N., President, in the Chair.

Dr. Harkin read the following paper on *Mastitis* and its treatment.

"The *Female Breast* in the virgin state, like the unimpregnated uterus, is not, to any remarkable extent, obnoxious to disease. No sooner, however, does the important process of utero-gestation commence, than, consentaneously with its initiation, does this delicate organ prepare to fulfil its peculiar duties: it ceases to be merely an ornamental appendage to the female bust, and becomes at once very liable to functional and organic disease.

"Soon after conception the gland begins to increase in size; fat is freely deposited between the digitations of the enveloping fasciæ; the hemisphere of the mamma begins to rise from the bosom; the nipple becomes protuberant; the areola enlarges and deepens in colour; nervous sensibility is greatly augmented; the mammary arteries increase in volume; the acini or secreting granules acquire a marked development; a milky fluid distends the lactiferous ducts; and long before the termination of utero-gestation, the organ in question gives indications of vigour and ability. With this augmented nervous and vascular development, the breast is naturally more prone to the incursions of disease. It is not, however, until about seven hours after delivery that the gland reaches its highest state of engorgement and distention, and, just as the child is transferred from the cavity of the uterus to the breast of the mother, so, by a sort of metastatic process the vital energy of the now contracted uterus appears to be precipitated upon this hitherto (at least in first labours) untried organ.

"Under such circumstances, it need not surprise us that tension, pain, followed by rigors and sympathetic fever, should arise, constituting ephemera, or milk fever, which usually terminates in twenty-four hours by a free perspiration. If, however, the vascular excitement should be very considerable, or any predisposing cause pre-exist, the areolar tissue, or the substance of the mammary gland itself, may inflame, and give rise to dangerous and even fatal results.

"If we discover, then, on closer observation, that the symptoms of constitutional irritation have not subsided within a period of twenty or twenty-four hours after the first rigor; if the breast presents a hard tumour, hot to the feel, and tender to the touch; if the pain extend to the axilla, and the secretion of milk be suspended, we may feel satisfied that inflammation of the mamma, or mastitis, as it is technically called, has set in.

"The type of inflammation is usually of the sthenic form, and the mildness or severity of the symptoms depends in a great degree upon the temperament, and also upon the seat of the inflammation, whether it be simply in the areolar tissue, or in the gland or surrounding fasciæ. Sir Astley Cooper enumerates three stages—the adhesive, the suppurative, and the ulcerative. The first continues for about four days, and is marked by swelling, pain, and the effusion of lymph; the second continues for ten days or a fortnight; in that period the skin assumes a blush on its surface, fluctuation is felt, and suppuration is established. In the third, ulceration takes place, and the matter is discharged, and its duration is very variable, depending upon the situation of the abscess, and the severity, or otherwise, of the inflammation.

"I have been thus particular in recalling to your recollection the different stages of the disease, as it is in the first alone that the simple mode of treatment which I mean to submit to your notice to-night has, in my experience, been almost uniformly successful. Before I come to that point, however, permit me to allude to the plan of treatment in general use, or rather to the absence of any systematic plan, the consequences of which are those extensive suppurations, sinuses, sloughings, hectic fever, and occasionally death from debility, or the absorption of pus into the circulating system, which we occasionally see. In many cases, no doubt, the patient passes through the curative stage in the hands merely of the monthly nurse, who applies some specific of her own, and often hopes to remove all inflammation by active friction of some stimulating liniment, or, taking an opposite view, endeavours to keep down acute disease, and restore the secretion by the application of saturnine lotions, and the practice of pumping and drawing the breast. Failing in this, the medical attendant is called in; he applies leeches, poultices, hot stupes, or cold, as may occur to him; gives purgatives, opiates, suspends the breast, but in vain, for the second stage has come on, and the third, if the lancet be not used, is unavoidable. He has, no doubt, treated the affection more scientifically, but the

result is the same; and, having failed, disappointment and irritation in the family are the result, and even blame to the well-meaning practitioner. I speak of what I have seen, and what, no doubt, every practitioner has witnessed. It is strange how unwisely some medical men, well informed upon every other subject, will act when treating a case of mammary inflammation. I have just terminated an attendance of six weeks upon a lady, now in the fifth month of pregnancy, in whom there were at once seven abscesses, distinct from one another, with large sinuses as well, all which might have been prevented by proper care on the part of her medical attendant at the period of weaning. It is not long since I had to visit a female in the country, whose medical adviser was applying sugar of lead in solution to prevent suppuration, and who, on introducing a lancet at my instance, drew off more than a pint of matter quite green in colour, and evidently lying there for many days. Later still, a lady consulted me, whose medical attendant, otherwise a very able young man, persisted in using the breast-pump every day until he brought away pure blood, hoping by this means to restore the secretion, when, in reality, suppuration was established, and the introduction of a lancet set free a large collection of pus. If we look to medical writers for instruction, the highest obstetric authorities afford us very little information, and the variety of remedies which they suggest is in itself an evidence of uncertainty and doubt. Dewees recommends stuping with vinegar for twenty-four hours; this failing, leeches. Burns says: 'It is very difficult to prevent suppuration; it is to be attempted, however, by purgatives, tepid poultices of bread and milk, or cloths moistened with tepid water; gentle friction with warm oil.' He condemns cold solutions of acetate of lead, alone, or preceded by leeches, recommends the breast to be supported, and has not had any experience of the internal exhibition of tartar emetic; recommends warm poultices in advanced stages, and evacuation by lancet.' Ramsbottom says: 'Leeches must be had recourse to, and repeated as often as occasion may require; brisk purgatives are exhibited, poultices, and warm fomentations, and the use of the lancet when the abscess points. He says the child should be applied before suppuration even with more assiduity to the affected side than to the other, and, failing this, the pump or the breast-pipe.' Drs. Hardy and M'Clintock allude to the advantage derived from the use of tartar-emetic: where the breasts have been distended for the first time; they say: 'This painful state is best relieved by rubbing the breast very well with warm oil; and if any febrile excitement attend, small and frequently repeated doses of tartar-emetic are given, and the bowels freed. In treating the abscess, poultices, warm spirit dressings, and strapping, as in hernia humoralis.'

"And this, in fact, is the sum of the treatment recommended by our obstetrical celebrities; they advise, without much confidence, leeches, venesection, warm applications, cold lotions, stupes, poultices, purgatives, straps for support; and, when the usual ter-

mination arrives, the use of the lancet. These remedies are, in my mind, only adjuncts in the treatment; they should never be elevated to the position given them; they are only capable of relieving symptoms, with, perhaps, the exception of venesection (not admissible in every case); and they cannot ever influence to a sufficient extent the derangement of vital energy which, in reality, constitutes inflammation. No doubt, saturnine lotions may diminish the redness and heat, warm stupes relieve the painful tension, and leeches, if repeated, may partially relieve congestion, although it is well known that their frequent application to the breast in amenorrhœa produces in a short time great congestion and enlargement of that organ, with the establishment of the menstrual discharge. Yet, while the attendants are hoping that the disease is checked from the apparent decline of those symptoms, inflammation is steadily pursuing its course, structural alteration succeeds to functional derangement, and abscess and ulceration are the natural results.

"While denying the utility of the above-mentioned remedies, I cannot sufficiently reprehend the use of the breast-pump and tubes, so much relied on by some practitioners. I cannot understand how by mechanical means we can hope to restore secretion to a gland in the state of inflammation; the return of the lacteal secretion is an indication, or rather an accompaniment, of cure; but they gravely err who, in this case, mistake the effect for the cause; suspended secretion can only return after the subsidence of inflammation, yet many regard its suspension as the cause of the inflammation. Suspended secretion, however, like redness, heat, and pain, is very useful in directing our attention to the seat and progress of the disease. If we had a patient suffering from inflamed kidneys, with scanty urine, and, perhaps, peritoneal effusion, what but a false pathology could induce us to rely principally upon stimulant diuretics and hydragogue purgatives, overlooking altogether the changes in structure of the secreting organ; and yet it is not more false in theory or in practice to hope to restore the healthy state of the mamma by this strange application of hydraulic powers?

"The mode of treatment which I propose to recommend, and which, within the limit of the first or adhesive stage, has almost uniformly proved successful, occurred to me in this way. I had a patient recently delivered of twins; she was of a very full, plethoric habit, and about four or five days after delivery presented all the marks of mastitis in a very violent form. The secretion was completely suspended, and there were present all the symptoms of great constitutional excitement. I felt that something decisive must be done, and that the ordinary *dilettante* plan would *not* do; I was averse to bleeding from the arms; and having observed the powerful effect of tartarized antimony in the treatment of orchitis, a gland of similar nature and organization, I resolved to give it a fair trial. It was administered in half-grain doses; and this was continued until it produced its full effect, nausea for several hours, free vomiting, moderate purging and diaphoresis. When visiting the patient twelve hours after, I was agreeably

surprised to find the pain and swelling gone, the pulse restored to the natural standard, all headach and constitutional symptoms removed, and the breast pouring out the lacteal fluid. I should mention that along with this I caused her breast to be stuped with flannel wrung out of hot water every half hour for twelve hours, and every time covered over with a small wooden bowl, previously heated in hot water. The second case in which I tried it was equally successful, but with this unpleasant result, that the child, then a few days old, after partaking of the mother's milk, took convulsions and died, whether *post hoc* or *propter hoc*, I could not then say; but since that time I have been particular in directing that the first secretion of milk, after taking the tartarized antimony, shall be withdrawn, and the breast thoroughly emptied before it is restored to the infant. Facts are wanting upon the subject of the absorption and detection of active medical or chemical agents in the lacteal secretion. The science of Toxicology has done a certain amount of good in this way, and will probably further elucidate the subject; but, so far, an interesting field of observation is open to us. In reference to this point, however, I have had great difficulty in restraining mothers from yielding to the importunity of the infant. In many cases they have given the breast to the child with perfect impunity; but in others, free purging and vomiting, without any fatal effects, were the results. The usual formula I prescribed was four grains of tartrate of antimony dissolved in four ounces of camphor mixture, of which a tablespoonful was administered every fifteen minutes till vomiting was induced. This was usually more than sufficient for the purpose; but I have had occasionally, in peculiar constitutions, to give at least eight grains of the salt before any appreciable effect on the stomach was produced. It is well known what resistance disease offers to medicine, and that remedies which, in a healthy state, would prove injurious, in disease act a salutary part. For this reason I have never yet met a case of mastitis, in which tartar-emetic was contra-indicated, or in which it was productive of injury. I have even given it after weaning, when pregnancy was coexistent, without any bad result following; the mother having been ignorant of the fact, or having concealed it from me.

"Fully eighteen years have passed since I first adopted this practice; and although I cannot even guess at the number of cases I have successfully treated, yet having had charge of the cases arising from more than 1200 labours, which I have since that time conducted, I can speak with the confidence that experience has given me.

"Within the limit of four days, then, after the onset of mastitis, that is, during the adhesive stage, I have scarcely ever failed in bringing on a cure by resolution. After that period, when suppuration has commenced, the controlling power of this remedy is lost, and the ordinary treatment applicable to all glands in a state of suppuration must be followed, viz., hot stupes, poultices frequently changed, the early use of the lancet when suppuration is established,

and, after the abscess has been discharged, moderate and general pressure by straps of adhesive plaster having sufficient aperture for discharge of purulent matter. The indurations which often remain are best treated by friction with compound iodine ointment.

"In the secondary abscesses which form after the first have run their course, this remedy is not so successful; the inflammation has then assumed the asthenic type, and in this case quina, opium, and change of air, with mildly nutritious diet, must be chiefly depended on; but, with the judicious use of the remedies above indicated, this second stage, with all its painful concomitants may, in almost every instance, be avoided, and the structure and important functions of the gland be preserved from injury. To recapitulate: the treatment I have so successfully followed is, to administer tartar-emetic in half-grain doses every fifteen minutes till nausea and free vomiting is produced, and to maintain the sickness for several hours, if required; constant stuping for twelve hours; rest in the recumbent position; ablactation, or temporary weaning of the child; and, if the antimony do not happen to act on the bowels, then a saline purgative. Such has been my practice for more than eighteen years; and so great is my confidence in its efficacy, that I am accustomed to say to my patient, 'Follow my advice in every particular, and I promise you complete relief in twelve hours.' In thus occupying the attention of the Society, I do not lay claim to any discovery in medical science; all that I assume is the successful application to a particular affection of a principle well-recognised in the treatment of disease.

"N. B.—Since reading the above, a friend has called my attention to the fourth volume of the Dublin Medical Journal (first series), published in January, 1834, in which Dr. Beatty has put forward similar views. The Doctor recommends smaller doses, $\frac{1}{16}$th, of the same remedy at longer intervals (an hour), omitting the medicine if vomiting be produced, and looks for improvement in twenty-four hours. This testimony of so very eminent an authority to the use of tartar-emetic, although overlooked by compilers of our modern text-books, I am very proud to acknowledge; as, although not recommending the remedy in such large doses, it affirms the principle I wish to establish, and may encourage others to adopt this plan, which, although the result of my own unaided observation, might not on that account obtain from the profession at large the attention otherwise justly its due."

August 1, 1859.

Dr. Patterson, President, in the Chair.

Dr. M'Cormac read the following paper *On some Features of what is termed Revivalism:*—

The phenomena known under the term "revivalism" are confined perhaps to no nation or time. They extend to both body and mind, producing, among other results, in the former, catalepsy, convulsions,

speechlessness, fainting-fits; in the latter, exaltation, wandering, and, in some cases, insanity. The medium of communication between revivalist and revivalist is certainly the mind; and through the operation of mind on mind are all the phenomena appertaining to it, in the first instance at least, produced. Secondarily, indeed, the mind of the affected person acts upon itself and upon the body likewise.

The great majority of sufferers are females, and these again are almost entirely confined to the humbler classes of society and to particular sects. These circumstances alone, if any proofs were wanted, show the artificial and partial character of the phenomena of revivalism.

It is quite unnecessary to describe the special cases and phenomena of revivalism. One case of hysteria, the mental pre-occupation apart, has a general family likeness to other cases of hysteria; catalepsy vies with catalepsy; and convulsion with convulsion. That these diseases, epilepsy even, in certain cases inclusive, are propagated by imitation, is matter of notoriety to medical men. The revival movement at Cambuslang nigh Glasgow, in 1742, was like the various revivals that have since taken place in America, as well as the Belfast revival movement of 1859. One and all, on the part of those who take a share in them, assume a personal communication with the Deity, a special providence and a special inspiration, whereas it is the general impression of intelligent thinking men that they are the exclusive result of imitation.

The present outbreak of revivalism has worn all the characters of a real epidemic. It has attacked the spinners in their mills, the servants, i. e. the servant-maids, at their work. From some places of worship the smitten ones, it is said, could have been counted by scores. The same movement has gone from town to town, and from neighbourhood to neighbourhood. The unlearned teach, and the ignorant expound, while the educated and intelligent look on in silent wonder, or, in some instances, unhappily, lend their countenance to the work.

An able observer, a clergyman of the Establishment, wrote as follows to me from the country:—"The girls and boys who have been struck down are going about kissing one another in public. We have also had a new feature. A child of six months old took it, and its countenance and the way it held out its hands were, they said, quite heavenly."

I have been informed by trustworthy observers, that in those cases in which immoral, intemperate persons were attacked, an entire reform was very often observable in their conduct and bearing. The intemperate became temperate, the immoral moral, and evil speakers and loose livers, of correct deportment. That this was so in many instances, I have not a shadow of doubt. At the same time, there was very often a complete cessation of all habits of regular industry. Some few died of disease, brought on by over-excitement. Others became insane. And a few, there is every reason to

believe, counterfeited the phenomena of revivalism, some to approve themselves more worthy, and others from motives yet less creditable. The following three letters have already appeared in the local journals:—

"I. *The True Revival.*—The true revival is nearness to God, the service of the heart, the habitual realization and the practice of those just and pure and generous affections which realize indeed heaven in this life, and secure its reversion in the next. Spasmodic shoutings, or cries, or writhings, or self-denunciation, or protracted melancholy, associated with whatever religious catchwords, are not a true revival, will not conduct us to God. They are but a temporary effervescence of over-wrought feelings, sometimes, though rarely, leading to desirable results, but much oftener to self-deception, spiritual arrogance, bodily disease, and not very unfrequently the lazar-house for the insane.

"The history of humanity, with the annals of self-imposture, in every sect almost, is rife with instances of this boiling-over of the religious element, which, in later years, now in America, now in Wales, and now here, bears the name of religious revivals. It is simply the perversion or misdirection of a sentiment else natural and needful to the soul of man. But the religious sentiment itself, like all others, demands the guidance and restraints of reason; else, the most ignorant and besotted often laying claim, false claim, to the immediate direction of Heaven, go astray themselves, and insult the faithful record of right convictions and a holier faith.

"The kingdom of heaven is won by slow degrees, by effort, by truthfulness, the habitual practice of what is right; and not through spasms, and contortions, and grimace. The inspirations of the Most High follow closely on the development of the soul in affection, and intelligence, and goodness. The pure in heart indeed shall see God[a], but not the less true is it, from the world's beginning until now, that with whatever certainty the culture of the religious, the spiritual affections, leads to heaven, it must, in order to realize its fullest, fairest fruits, be associated with all the proprieties, the soundest reason, the loftiest, most unflinching development of the intelligence."

"II. *The Real Revival.*—The Deity, through the mouths of all His servants, assures us that just deeds and pure affections are the avenue to His favour, and to the happy frame of mind which realizes heaven. Let us rescue, if we can, by direct and energetic culture, the greatly neglected children and youth of this large community, rendering them, indeed, good sons and daughters, and, presently, good husbands and wives and citizens. But it is not through religious empiricism that we shall do so, or by encouraging fainting-fits, or incoherent religious ravings and ejaculations, too often no more the evidence of a real religious influence than would be an attack of epilepsy or insanity. There is no such short-cut to heaven. Such influences are evanescent as they are unreal. No

[a] "Blessed are the pure in heart, for they shall see God."—MATT. v. 8.

respectable religious teacher, no reflecting man, should lend them the slightest countenance, unless to discountenance them. Very different are they in character and result from the sedulous, persistent culture of the heart and understanding, which, coupled, as I must again iterate, with just deeds and pure affections, is the only road to heaven.

"'Revivals,' observes a writer in the Edinburgh Review for October, 1850, 'are made up of all the arts of excitement, coupled with some of the arts of fraud, which mingle strangely together in spiritual zealotry. Religious madness is a form of insanity well known in lunatic asylums and out of them'[a]. 'It is admitted,' says Sir Charles Lyell, in his work on the United States, second edition, 'and deplored by the advocates of revivals, that after the application of such violent stimulants there is invariably a reaction, and it is creditable to the New England clergy of all sects that they have in general, of late years, almost discontinued such meetings.' The same judicious writer, speaking of the Millerites, followers of a man who announced the 23rd of October, 1844, as the end of the world, says that they advertised ascension robes for going up to heaven, and that some even 'sat up all night in their shrouds,' in anticipation of that event. I heard much of the Millerites during a tour in the United States, and of their insane doings, and came myself, near Troy, north of Albany, in contact with an instance of fanaticism so revolting, that I hesitate to describe it in a public print.'

"III. *The Only Revival.* — The revival movement is a moral epidemic, an infection flowing from imitation, propagating itself at once through the minds and nervous systems of those affected. In many instances, indeed, it impairs the moral equilibrium, produces faintings, spasms, exhaustion, ejaculations,—too often no more a criterion of sound religious influences than were long since the excesses of the convulsionaries of St. Medardus or Loudun.

"To the revivalist sufferer his revival seems a great fact. He ascribes it to the Spirit of God, whereas it is to be ascribed to the spirit of imitation, of whose potent influence he knows nothing.

"It might be said—Even so, let us turn the revival movement to good. But the revival movement, so termed, is a morbid and impermanent one, that cannot well be so turned. It is not thus that the waters of life, the peace of God, the spiritual, the only revival, can be made to irrigate the barren wastes of man's soul. For God's sacred influence is peace; it is seen in the steadfast performance of every duty. Here, the experience of the physician avails as well as that of the spiritual teacher. If the latter foster a merely hysterical

[a] The notices in medical works on the results of perverted religious influences are almost countless. "The instances of religious excitement furnished by the revivals, the camp meetings, and field preachings in America and Scotland, the modern gift of tongues in this metropolis, are all forms of this kind of partial insanity, which often passes into more furious mania, or confirmed insanity."—*Copland's Medical Dictionary*, Art. "Insanity," §§ 122, 286. See also Dr. M'Cormac's "Aspirations from the Inner, the Spiritual Life." [Now in the press.]

impulse of imitation, and look to it for realizing the sober, solemn fruits of permanent, well-reasoned culture, he will but disserve the object of his solicitude. God does not torment his followers. Love and belief, if spiritual teachers could but be made to see it, are indeed one. It is only by daily, reiterated, persistent culture that apathy is to be roused, ignorance superseded, and the soul brought into real relation with the truths of Heaven.

"For every sacred, holy duty is consonant with the discharge of the daily task. The schoolmaster often is needed rather than the religious teacher, unless, indeed, the latter happen to be a wise and large-hearted man. And, even then, secular and religious culture should go together. The neglected, ignorant, suffering many, and not merely the subjects of a pretended religious movement, and, in reality, temporary, baseless excitement, should be attended to. In plain earnestness, there is abundant time for the worship of God in the morning and evening hour, ere the daily task, which is also holy, has begun, and after it is done. For to work, in very truth, is to pray[a]. It is not right that the people should be induced to neglect their daily toil. And those who wish the multitudes well will do better by teaching the unclean to be clean, the immoral to be moral, the ignorant to get rid of their ignorance, realizing comfort, and order, and peace—for the empire of goodness is consistent in all things—than in running after pretended revivals, which, as all experience shows, and will also show here, have neither permanence nor fitness to recommend them."

Professor Gordon brought forward the following case of *Fracture of the Clavicle between the Coraco-clavicular Ligaments.*

"Sarah Willis, aged 16, a mill-worker, admitted into the Belfast General Hospital, May 31, 1859. She says 'that, whilst at her work, she stumbled, and, falling on her elbow, injured her shoulder.' On looking at her as she lay in bed, the nature of the injury was very evident. The right shoulder was directed more forwards than the left, and, relatively to the clavicle, depressed. The trapezius was visibly projected backwards, opposite to and by the outer end of the inner or sternal fragment of the clavicle, fully half an inch of which projected beyond the inner end of the outer or acromial fragment. The fracture was oblique from behind forwards, and about two lines external to the commencement of the posterior convexity. The acromial fragment posteriorly was three-quarters of an inch in length, whilst along its anterior border it measured one inch. The distance between the acromio-clavicular and sterno-clavicular articulations on the left side was four inches, whilst that of the right or injured side was only three inches. The outer fragment rested against the anterior border of the sternal fragment.

"This is the fourth example of fracture of the clavicle between the coraco-clavicular ligaments which I have met with in a period

[a] "Laborare est orare."

of six months. Two of them were of old standing, and two recent. The former I had an opportunity of dissecting, and the results have been recorded in the Transactions of the Clinico-Pathological Society. Although two of these instances have occurred subsequently to my first communication on this subject, they confirm fully all the observations then made. I shall now, however, give a summary of the conclusions at which I have arrived, and of the facts observed in the two cases in the living, and of the three specimens deposited in the Museum of Queen's College.

"1. That, from the form of the clavicle, fracture in the posterior concavity, or in that part of it to which the coraco-clavicular ligaments are attached, is not a rare accident, having met with four cases within the short period of six months, two in the living, and two in the dead.

"2. When the clavicle is broken between the coraco-clavicular ligaments, there is generally considerable displacement of the outer fragment forwards on the anterior border of the inner portion; and the attachments of these ligaments do not offer any important resistance to this displacement. If we dissect away all the soft parts, leaving the clavicle attached to the scapula by its ligaments alone, then saw through the clavicle, leaving the compact layer on its under surface untouched, and after that break it, it will be found that the coraco-clavicular ligaments do not offer any appreciable resistance to the outer fragment, being applied against the anterior border of the inner one.

"3. We have fracture between the coraco-clavicular ligaments without displacement, and when that occurs it must be referred to some other cause than to the resistance offered by these ligaments.

"4. The extent and nature of the displacement in fracture between the coraco-clavicular ligaments will be found to be very variable. There may be scarcely any displacement, or, as in No. 1 specimen, the outer fragment may unite almost at a right angle with the inner one, the upper surfaces maintaining the same horizontal level; or, as in No. 2, with the acromial fragment somewhat above the sternal one, and the angle formed between the fragments somewhat less than a right angle; or, as in No. 3 and the case just related, where the outer fragment is displaced so much inwards as to leave half an inch or even a little more of the inner fragment projecting beyond the inner end of the outer fragment. No. 3 presents us with an example in which there was a false joint, the fragments being united by strong ligamentous bands, and, in addition, the outer end of the inner fragments was so rotated by the action of the trapezius muscle, that its upper surface looks forwards and upwards, instead of directly upwards.

"5. The outer end of the sternal fragment seems to be displaced backwards and slightly upwards, but this is more apparent than real, from the shoulder falling downwards and inwards.

"6. From the inclination forwards and inwards of the shoulder, the outer end of the sternal fragment comes in contact with the

trapezius; hence, when pressure is made on that muscle opposite the fracture, it becomes applied against the end of the sternal fragment, causing a jagging pain, much more acute than when pressure is made over any other part of the fracture. The severity of this pain, however, will depend on the seat of the fracture, its nature, the form of the clavicle, and the tolerance of the patient to pain. Thus the pain on pressure in my first case, that of the carpenter, was most acute, whilst that of the girl Willis was not complained of.

"7. From the form of the clavicle, fracture occurs most frequently at the centre of the posterior concavity, or a little more external, than between the trapezoid ligament and acromio-clavicular articulation. For, when we take into consideration the short space that exists between the extreme external attachments of the trapezoid ligament and the acromion, the greater transverse breadth of the clavicle here than half an inch or an inch more inwards, and the shorter lever, it is quite evident that fracture between the ligaments and acromion must be a very rare accident, and the result of some peculiar and direct force; whereas, in fracture between the coraco-clavicular ligaments we have a longer lever, lessened diameter, and the curve of the clavicle, all conducing or predisposing to fracture here rather than external to these ligaments.

"8. From the attachments of the coraco-clavicular ligaments, from the three specimens exhibited, and the two cases related, I am of opinion that several of the cases of fracture of the clavicle described by Dr. R. W. Smith in his Treatise on Fractures in the Vicinity of the Joints, as external to the coraco-clavicular ligaments, are really between them, and that his observations on this accident, and those of Mr. Erichsen[a], apply more correctly to the fracture between than to those external to the coraco-clavicular ligaments.

"*On the Treatment of Fractures of the Clavicle.*—I have not as yet made any reference to the treatment of fracture of the clavicle between the coraco-clavicular ligaments; but as this injury is to be treated on the same principles as fractures of the inner two-thirds of that bone, and as the views held by me are different from those generally entertained, I shall now briefly state them.

"The main use of the clavicle is to keep the scapula outwards, and thus preserve the transverse breadth of the shoulder, giving to the upper extremity a greater freedom and scope of action. No matter what may have been the occupation of the individual, the upper surface does not change its form; but such is not the case with its anterior and posterior borders: they become curved just in proportion to the laborious occupation at which the individual may have been engaged. Hence, when the clavicle is fractured, the scapula, no longer held outwards by it, takes the direction which the physiological action of the muscles impresses upon the sound bone, that is, forwards and inwards. The thorax represents a cone, the transverse diameter of which rapidly increases from above downwards;

[a] Science and Art of Surgery.

it also slopes obliquely downwards and forwards; and besides its greatest transverse diameter, against which the base of the scapula and a small portion of its venter rest, is not in, but behind its centre. The external two-thirds of the venter and neck of the scapula are not in immediate contact with the ribs, but are held outwards by the clavicle. Now, if we place the scapula, supported by the clavicle, in its natural position, and then withdraw the clavicle, the venter or fossa subscapularis will become more extensively applied to the thorax, and although the posterior border or base of the scapula may still maintain its relative position on the ribs, its external or acromial angle will fall forwards and inwards. Hence, in fracture of the clavicle, this rotation or alteration in the direction of the scapula causes the outer fragment of the clavicle and acromial angle of the scapula to be depressed, though the scapula itself, in its vertical relation to the ribs, has not undergone any change.

"If we observe carefully a person who has sustained a recent fracture of the clavicle, we see that he inclines towards the injured side, with the shoulder seemingly depressed; and if, at the same time, we examine the spinal column, it will present a concavity towards the injured side. If we now direct the patient to straighten himself until the curvature of the spine disappears, and then compare the two shoulders, in most recent cases we shall see that the shoulder of the injured side is no longer depressed, but actually raised; and the more it is elevated, the more will the scapula come into relation with a narrower part of the thorax, and the more, therefore, will its acromial angle fall forwards, inwards, and downwards, diminishing the distance between the sterno-clavicular and acromio-clavicular articulations.

"The explanation hitherto given by surgeons of the displacements in fractures of the clavicle is, that the outer fragment is drawn forwards and inwards by muscular action, and mainly depressed by the weight of the extremity. That the outer fragment lies beneath the inner one, there cannot be any doubt; however, that it and the scapula are dragged downwards, relatively to the thorax, by the weight of the extremity is a statement the accuracy of which I cannot admit. Is such an explanation in accordance with the recognised influence of muscular contraction in causing deformity? The muscles in this fracture, as in others, are not passive, but active. The weight of the extremity being regarded as the chief agent in causing displacement, the treatment has been conducted so as to counteract it. The lower end of the humerus has been brought forwards, and used as a lever, to force, by its upper end, the scapula upwards, outwards, and backwards, and thus made to counteract the displacement downwards, forwards, and inwards. Have not the form of the thorax and the relations of the scapula to it been overlooked? Has this treatment been successful? All practical surgeons bear testimony that in fractures of the clavicle the treatment has not been very satisfactory. Overlapping of the fragments is the rule, and accurate adaptation the exception.

"The following seems to me to be the nature and cause of the displacement. When the clavicle is broken, the outer or acromial angle of the scapula, no longer held outwards, falls forwards, inwards, and downwards. The form of the thorax conduces to this movement, but the chief agents are the serratus magnus, lesser pectoral, and subclavius muscles; and whilst the scapula is in this position, the rhomboideus levator angulæ scapulæ, and the trapezius muscles elevate it, also assisted very much by the action on the humerus of the clavicular and upper sternal fibres of the great pectoral. The patient leans to the injured side, not to allow the shoulder to be depressed, but to relax the muscles excited to contraction by the irritation of the broken surfaces. To counteract the displacement that occurs, let a large pad, larger than that usually employed, be placed in the axilla, and fixed there by a figure of 8 or clavicular bandage, sufficiently tight not only to fix the pad steadily, but also to keep the shoulders well backwards; let the arm now be extended directly downwards and firmly fixed to the body by a bandage or belt carried horizontally around the body, and permanent extension maintained by passing a band around the perineum or upper and inner part of the thigh (the same as the perineal band used in fractures of the shaft of the femur when treated by the long splint), and extending around the upper end of the forearm, flexed at right angles with the arm.

"When extension is thus made on the arm directly downwards with a large pad in the axilla, the outer fragment passes outwards, and comes into the most accurate apposition with the inner, and this is materially assisted by the form of the thorax, for, as we pull upon the arm, and thus drag the scapula downwards, it is forced outwards and brought over a wider part of the thorax, which counteracts very much the tendency to displacement inwards.

"*On Fracture of the lower end of the Radius.*—Of all the bones of the body, none of them are, I believe, so frequently broken as the lower end of the radius. It is almost universally admitted that after this accident the concavity of the radius is seldom perfectly restored, and the utility of the upper extremity is often impaired for weeks, months, and sometimes permanently, notwithstanding the greatest care on the part of the surgeon. There is, therefore, a necessity for a more correct and satisfactory mode of treatment. The object of the present communication is to bring before the profession a splint which I think is better calculated to restore the natural concavity of the radius than those now in use.

"Without entering into detail as to the anatomical characters of this accident, it will be sufficient for my purpose to say, that the broken ends of the bones undergo a double displacement. The upper end of lower fragment and the lower end of upper fragment are displaced forwards and inwards, causing a prominence in the front of the forearm, and a diminution of its transverse diameter. As a consequence of this displacement, the carpal end of the radius is directed downwards, backwards, and a little outwards, causing the styloid

process of the radius to ascend, and also giving an appearance to the hand as if it had undergone a partial displacement backwards, and to the radial side of the forearm.

"To counteract this deformity, the treatment usually adopted may be well illustrated by giving that recommended by Dr. R. W. Smith in his Treatise on Fractures in the Vicinity of Joints, page 167:—'The deformity having been, as far as possible, removed by extension and counter-extension, and the hand moderately adducted, a cushion is to be placed upon the posterior surface of the limb, of sufficient length to extend from the elbow to the fingers; the portion of this cushion which corresponds to the lower fragment of the radius and to the carpus should be thicker than any other part, and from its ulnar to its radial border should gradually increase in thickness. A transverse section of this portion of the cushion would represent an isosceles triangle, the base of which would correspond to the radial border of the limb. The objects proposed to be attained by constructing the pad of this form are, to press the lower fragments of the radius forwards, and to direct its external border towards the side of pronation. . . . A second cushion, thicker below than above, is to be placed upon the front of the limb, but should not descend below the margin of the superior fragment, for otherwise it would, to a certain extent, counteract the influence of the dorsal cushion, and would tend to maintain the displacement backwards of the inferior fragment. An anterior and posterior splint are then applied, each of which should be an inch broader than the forearm; the posterior should extend from the elbow to the fingers, and should be curved from the wrist downwards, to receive the adducted hand; the anterior need not descend below the palm of the hand; a roller is then to be carried around the splint in the ordinary manner.'

"Is a simple cushion, thicker below than above, placed along the anterior surface of the forearm, and extending as low as the lower end of upper fragment, sufficient to maintain, with the assistance of the dorsal pads and splint, the convexity of the radius? Place a splint along the anterior surface of the forearm, and look at the relations of the radius to it: below, it is in contact with the splint, but as we ascend, we see the radius gradually inclining from the anterior to the posterior aspect of the forearm, leaving a triangular space opposite the termination of the fleshy fibres of the supinatus longus, of nearly an inch and a half in breadth between it and the splint. Besides, the cushion in front, thicker below than above, exercises its chief pressure on the ulnar side of the forearm, and is totally insufficient to re-establish the natural concavity of the radius, and the anterior splint descending as far as the palm of the hand, with the hand towards pronation, prevents the pad being pushed sufficiently backwards. The triangular-shaped cushion behind, supported by the dorsal splint, has a tendency to rectify the displacement, but it cannot do so effectively unless we have a firm support in front pressing the fragments backwards, whilst the carpal end of the radius is forced forwards. To fill up the concavity of the radius, and to pre-

serve it during the consolidation of the fracture, something more solid than a cushion will be requisite.

"Take a piece of common deal or pine, the length and breadth of the forearm, and three-fourths of an inch in thickness, having its lower end rounded off, that it may rest equally on the forepart of the carpus and upper part of the hand when flexed on the forearm; another piece of wood, one inch in depth, and one inch and a half broad, is to be attached to the piece just mentioned, about one-third of an inch from the radial border below; then cut it obliquely from without inwards, and also below and above, until it fills up and fits exactly the concavity of the radius. Take a third piece of wood, about two inches in depth, and four in length, cut it obliquely, so that, when attached to the back of the first piece, it may incline inwards, and also towards the ulnar side; make a notch in its radial border, to receive the ball of the thumb, and allow of the adduction of the hand. Having removed the deformity by extension and counter-extension, and placed a soft cushion on the splint, let it be applied on the extremity; then place a small cushion over the back of the carpus and hand, and another on the upper and back of the forearm, near the elbow-joint; over these, a straight splint extending from the elbow to the hand. The notch below receives the ball of the thumb, and the piece in which the notch is cut, forming an obtuse angle with the body of the splint, permits adduction of the hand, and, as it also inclines inwards, it permits moderate flexion of the hand upon the forearm. The piece of wood on the radial border of the body of the splint, filling the concavity of the radius, serves as a fulcrum, pushing backwards the fractured ends of the bones; and the posterior splint, acting on the back of the hand, carpus, and carpal end of the radius, inclines them forwards in the direction of flexion. The piece of wood which is attached along the radial border of the body of the splint, being about one-third of an inch from its margin, is directly forced into the concavity of the radius. The outer margin of the body of the splint receives directly the pressure of the bandage, and protects the outer margin of the radius from it, and thus is the transverse breadth of the forearm preserved. I am inclined to think that too much importance has been laid on the adduction of the hand in restoring the interosseous space; as I believe, if we succeed in restoring the natural concavity of the radius, we will also restore at the same time the interosseous space, just in the same way as we would a broken piece of wood, whose broken surfaces were not displaced, but formed an angle from pressure on both its ends. To remedy such an inclination, all that is requisite to do is to make such an amount of pressure at the seat of fracture as shall restore it to its straight position."

September 5, 1859.

Dr. Patterson, President, in the Chair.

Dr. Murney related the following case:—

"In 1857 I detailed the history of a case of *Popliteal Aneurism* treated by compression, which terminated fatally by the bursting of the artery on the proximal side of the tumour, in consequence of the extensively diseased condition of the coats of the vessel.

"To-day I place before you a brief record of another case of the same disease, treated in similar fashion, followed by satisfactory results.

"A man, aged 26, of medium stature, and rather spare habit of body, was admitted into the General Hospital on the 9th of June last. By occupation a stable-boy, occasionally he exercised horses, but his duties were more those of a groom; his habits were at times dissipated, but he could scarcely be called a drunkard. The disease had existed for four months; when first noticed, the tumour was not more than half the size of a pigeon's egg; at the same time the superficial veins of the leg (which had been varicose for years) became much more swollen, and the limb generally was larger. The prominence in the ham steadily and regularly increased, and when he came under my care it was fully as large as a medium-sized cocoa-nut placed transversely, producing a somewhat flattened prominence on the inside, and a more spherical elevation on the outside of the knee. In brief terms, the following points were noticed: the knee was, of course, semiflexed; pulsation was arrested by compression of the femoral artery, and at the same time a general diminution in the size of the swelling took place; a distinct bruit de souffle was heard; pressure on the proximal side, of course, arrested this sound; on its removal, a distinct bang or thump was heard as the blood resumed its course. There was no evidence of disease in any other part of the arterial system.

"It was my intention to commence treatment in two or three days; unfortunately, however, on the second day he slipped when crossing the ward, and hurt or strained the tumour very much; the knee and leg became swollen, and he suffered great pain. Evaporating lotions to the part, opiates, and other treatment considered advisable, were used, and on the fifth day after, viz., on the 16th, the swelling was gone, the pain subsided, and the stethoscopic symptoms were the same as on his admission. Carte's compressors were now applied, and he was instructed how to use them alternately, as the pressure would become painful. Twenty-four hours after, the report in my case-book is: 'Tumour considered smaller to-day; no bruit can be heard at any part of the popliteal space.' On the 18th the report was: 'On the most careful examination, neither pulsation nor murmur can be detected; size of leg and prominence of tumour distinctly less; the latter is also less hard.' For the next day or two he was directed to screw down the compressors occasionally for half an hour at a time; a sense of numbness in the leg and foot, which was experienced

after the first twenty-four hours of pressure, now began gradually to subside, and the temperature of the part, which was below that of the other limb for the same period, was gradually restored as the collateral circulation became established. When all treatment had ceased for some days, he was seized with a mild febrile attack, which yielded after a time; and he was discharged from hospital on the 11th of July.

"In this case I considered the pressure was successful in twenty-four hours; but, as a measure of caution, I thought it better to continue it for a short time longer; certainly, the most decided opponent of the treatment of aneurism in this way could not say the time required was more than forty-eight hours. A few cases of such prompt and satisfactory results are on record; I regret they are not more frequent.

"I have not had an opportunity of witnessing the treatment by flexion as introduced by Mr. Ernest Hart, and practised by him, by Mr. Shaw, and others. I cannot, however, think of any case in which this new mode would be preferable to the older plan. It is said the appropriate cases for flexion occur in individuals of spare habit of body, and in whom the aneurism is small; this of course limits the number in which it can be tried. It has been remarked, whether the treatment occupied a short or long term, the patient suffered very much at first from the constrained position, and at a later period from stiffness of the knee-joint. On the other hand, I have not observed any difficulty in the application of pressure; in some irritable individuals, no doubt, the surgeon's patience will be taxed to induce his client to persevere with the treatment. I fear in such subjects any plan would be objected to.

"At present, I must say my opinion is, pressure is troublesome to the surgeon, but does not entail any danger or much annoyance to the patient; flexion, I expect, would require much less attention from the medical man, but would be more irksome to the sufferer.

"As yet, a sufficient number have not been treated by it to warrant a comparison with the more established method, so as to show if it possesses the advantage of greater rapidity in attaining a cure."

October 3, 1859.

Dr. Patterson, President, in the Chair.

Surgeon S. Browne read the following paper on *Dry Gangrene*:—

"The following interesting case I am desirous of submitting to the notice of the Medical Society, that it may be preserved among their Transactions. It illustrates a comparatively rare pathological condition, namely, chronic, dry, symptomatic, or, as it has been named, senile gangrene, occurring in a person of middle age; and it likewise shows the insidious nature of the disease, and the rapid progress of what may be strictly called a chronic affection. In the following brief notice I shall give a record of the history and progress of the case to its fatal termination; then the pathological con-

dition, as revealed by post-mortem examination; and shall close with some reference to the opinions of pathologists on the nature and causes of the disease under consideration.

"On Monday, the 8th of August last, Mrs. M'——, aged 48 years, was admitted into the Belfast General Hospital, under my care. She then seemed weak, and was much emaciated, like a person suffering from lengthened indisposition, or from the want of proper nourishment. To the latter condition, I have reason to know, she had been exposed. Her statement regarding her previous state was to the following effect:—Up to the period of her last confinement (some eighteen months since) she had enjoyed tolerable health, though she never had been of robust constitution, and had menstruated regularly, unless when pregnant. She had never suffered from acute rheumatism, nor indeed had ever been very seriously ill. After the birth of her last child, the menstrual function entirely ceased. A few days after her last accouchement she had an attack of pelvic inflammation of some kind, but had not any symptoms whatever of phlegmasia dolens. Since that period she has been rather delicate in health, partly arising from the cares, privations, and vicissitudes of a soldier's wife; and latterly there cannot be a question that she had not been sufficiently nourished, and had slept in a miserable, damp, badly ventilated lodging,—had been subjected, in fact, to those conditions which would vitiate the healthiest system. Under all these adverse circumstances, however, she felt nothing particularly wrong till the evening of Thursday, the 4th of August, when she experienced severe pains in the left foot and leg, and, during the night, in the thigh of same side. This pain was much aggravated in the morning, when she arose and bathed the parts in cold water; immediately after which she observed the limb became of a bright rose tint, and, shortly after, of a chocolate colour, the part feeling quite cold. About this time she was seen by one of the medical officers of the garrison, and afterwards by one of the Dispensary physicians, who sent her into the General Hospital. From these gentlemen I learned some of the preceding particulars, and also that on Saturday pulsation could be felt in the left femoral artery, throughout its entire course, till it entered the popliteal region. On examining the limb the day after admission, it was found to be greatly discoloured and cold from the toes up to the junction of upper and middle thirds of the thigh, and that no pulsation whatever could be discovered either in the femoral or external iliac vessels. The discoloration was mottled of different tints: some parts of the foot were nearly black; on the leg there were blue, green, and violet-coloured spots, interspersed with patches of a nearly natural hue, and the thigh was of a dusky yellow. The temperature of the limb decreased from the groin downwards, the lower part of the leg and foot being deadly cold, except in those spots which retained the natural colour, and in which there was appreciable heat,—both evidence of lingering vitality in the midst of surrounding death. The temperature I tested by the ther-

mometer. On the foot the temperature was that of water fresh from the cistern, 4° colder than the atmosphere of the open ward, which was 68°; at the knee the mercury rose to 70°; at mid-thigh it stood at 76°; and in the groin, 92° of Fahrenheit. The foot and front part of the leg were quite hard and shrivelled up, and the entire integument of the leg was dry, and without the least sensation,—indeed, sensation was lost from the mid-thigh downwards, save a feeling of pain about the knee. This, and a severe burning pain at the inferior part of the upper third of the thigh, were the only feeling she had in the limb. She had still some power of moving the thigh, but from the knee downwards all motion was lost. The pulse at the wrist was small, quick, and intermitting; the heart's action weak and irregular, with signs of valvular imperfection, and probably of dilatation of the left ventricle; the breathing was somewhat hurried and oppressed, unless when the patient had the shoulders well elevated—a position, I may remark, which had to be maintained throughout. The tongue was quite clean and healthy-coloured; the bowels acting naturally; the skin perspirable, but no profuse perspiration was present; and the general expression of the countenance was calm and hopeful, not indicating the dread state of the limb, and most unlike the expression which is so characteristic of acute gangrene of any extensive or important part. There was some, though not constant, irritability of stomach; the appetite was not good, and the desire for drink not urgent. I may state, however, that these symptoms varied greatly during the progress of the case, as on some days there was much greater depression and irritability than on others; and the pulse, sometimes weak and fluttering, at others was much stronger and less frequent, though at all times intermittent.

"Matters continued much in the same way till the 15th, when a line of demarcation began to form about four inches below the trochanter. This line was very irregular, and not well defined; the part was red and swollen, and was the seat of acute pain. By the 20th the line of separation was pretty deep, involving the integuments and muscular structure. From this there exuded a greenish fluid, of a very offensive odour. From the 17th the system began to be affected more markedly than before; the patient became restless and very thirsty, with nearly constant irritability of stomach; the expression of the countenance became one of great anxiety and distress, the heart's action very weak and fluttering, and there were occasional fits of impending syncope, with slight convulsive attacks, during which time the sufferer became, for a brief space, unconscious. When the line of separation had passed down to the bone, and the parts had nearly ceased to discharge the dark-coloured ichor, the poor patient seemed to rally a little for a few days.

"On the 31st of August I examined the right limb, as I had frequently done previously, to ascertain the state of the circulation in it. On that last occasion I found the pulsation in the femoral artery quite distinctly; but on the 2nd of September I was informed that the patient, on the previous evening, had been seized with

severe pain and spasms, or cramps, in the right foot, which, on examination, was found to be quite cold and blanched. When I examined the part on the 2nd, I observed the foot cold, and of a dusky hue; it was inverted, and the toes were firmly flexed. The patient complained of pain in the part and up along the limb, the heat and sensation of which were greatly diminished. The pulsation in the femoral, from below Poupart's ligament, was quite gone, and the right limb was evidently fast taking on the diseased condition of the left.

"It is needless to trace this most distressing case through all its varied symptoms. Let it suffice to say, that increasing disease, bed-sores, constitutional irritation, and consequent exhaustion finally destroyed existence after thirty-eight days of protracted suffering; during one week of which time nearly one-half of the body was dead already, and, for three weeks, one entire limb had been completely disorganized.

"The treatment consisted of beef-tea, wine, brandy, opium in large doses, camphor, and ammonia; while the limbs were kept rolled up in cotton wool, and pans containing hot water were constantly applied. Up to the time when the line of separation began to form, the parts affected were quite dry, and free from any disagreeable odour; but after the separation had passed deeply into the textures of the limb, the parts discharged a very offensive fluid. I then tried the deodorizing properties of the powder recently so much vaunted in the hospitals of France, and composed of plaster of Paris and coal tar. The proportions I used were six of the tar to about one hundred of the plaster. There cannot be a question that this mixture is a very good and very cheap deodorizer, and, in cases where it can be applied to all the parts yielding offensive gaseous products, will be found very useful; but in the case before the Society I found it necessary also to use the solution of the chloride of zinc ('Burnett's Fluid'), and even with the liberal use both of the powder and the fluid—one part to twenty or thirty of water,—and free ventilation, the air in the ward was very disagreeable.

"The following were the post-mortem appearances, the dissection having been carefully performed and recorded by Dr. Murney, —a sufficient guarantee that the inspection and record were accurately made:—Body very much emaciated; right leg and foot of a reddish-brown hue, precisely the colour of the stained tops of hunting-boots; the left lower limb was shrivelled, dried, and mummified; colour quite black as high as the junction of the upper and middle thirds of thigh, at which point almost complete separation of the dead from the living parts had been effected. The femur was exposed at all parts of its circumference, the only structures not yet separated being portions of the aponeurosis of the rectus femoris, semi-tendinosus, and semi-membranosus muscles. The viscera of the abdomen were healthy. Some adhesions were noticed, but not of sufficient importance to require special description. The abdominal aorta was of much smaller caliber than usual; in other respects it

was normal; there was nothing unusual about its various visceral branches. Immediately below the origin of the inferior mesenteric it was fully and firmly distended by a large clot, which also filled the common, internal, and three-fourths of the external iliac branches. It had been my intention to inject from the abdominal aorta, in order to examine the arteries of the lower extremities, but the presence of this clot compelled me to pass farther down, and strip the femoral, with the view of injecting the right limb from that vessel. It proved to be not of greater size than an average radial, and it was therefore after some trouble I was enabled to insert a small-sized femoral injection-pipe below Poupart's ligament. I used wax, coloured with vermillion, and thereby easily distended the main trunk, but the branches were not filled. This was caused by the presence of clots in nearly all the smaller arteries. Nothing peculiar attracted attention on the right side, although I followed the course, and removed for inspection the femoral, popliteal, and anterior and posterior tibial vessels to their terminations; except that the 'vasa vasorum' were more distended than usual. The left thigh was not injected, but the trunks of the femoral and profunda, and the anterior crural and external circumflex nerves, were followed to where the living had thrown off the dead parts. For a short distance from their extremities the nerves were more vascular, and their terminal portions were pointed. The femoral artery and vein had become ligamentous cords for at least one inch and a half from the line of demarcation. The pervious parts of the artery up to the common iliac showed intense congestion of the vasa vasorum, greater even than that on the right side; here also the caliber was a great deal less than natural. The aorta and its larger branches being laid open, remarkably firm fibrinous clots were found in the parts named, and also in the trunks of both limbs, at various points. The lining membrane was remarkably vascular in frequent patches. There was nothing peculiar about the vena cava ascendens, but the larger trunks which directly or indirectly terminate in it were with difficulty separated from the arteries they accompanied; indeed, it was quite impossible to disconnect the left femoral vessels for about two inches above the line of demarcation. Nearly the whole length of all the larger veins, so high as their termination in the cava, were filled with firm coagula. In the thorax tolerably extensive pleuritic adhesions were found; the lining substance was healthy. Before being taken out, the heart seemed greatly enlarged; but section of the cava and pulmonic veins permitted a large quantity of blood to pour from the cavities on both sides. The muscular tissue was healthy; weight, 9 oz. The openings, valves, &c., on the right side were normal. The left auricle was dilated so as to be fully one-half larger than natural, and the walls were thicker. The auriculo-ventricular opening was constricted, and its margin firm and cartilaginous. It was precisely of sufficient magnitude to admit the handle of an ordinary scalpel, which was $1\frac{1}{8}$ inch in circumference. The mitral valves were healthy. The walls of the left ventricle were hy-

pertrophied, and measured $\frac{7}{12}$th of an inch in thickness at the centre; this cavity was also dilated. The hydrostatic test showed the aortic valves to be incompetent. The opening from the ventricle into the artery was also diminished, and permitted the passage of an object $1\frac{3}{8}$ inch in circumference. The three valves were studded with a soft, wart-like growth, in greater quantity on the posterior and left division. In the place of each corpus aurantii was found a body of bony hardness, as large as a flattened pea. The arch, thoracic aorta, and their branches were of an average size. On being laid open, several highly vascular spots were observed, and patches of atheromatous deposit, of varying size, were noticed beneath the living membrane.

"*Remarks.*—The revelations of the scalpel in the case before us illustrate the pathology of symptomatic gangrene as laid down by Dupuytren, and show that some of the causes which the distinguished Baron considered as leading to the disease existed in a marked degree. Baron Dupuytren says that 'in investigating the cases of individuals who are subjects of symptomatic gangrene, it will be almost always found that they have been addicted to spirit-drinking or gross feeding, or that they have been affected with some chronic disease of the heart, of the aortic valves, and of the great vessels; all of which are causes that operate most frequently in provoking irritation and inflammation of the arterial system,'—this inflammation, no matter how provoked, causing the coagulation of the blood in the vessels affected, consequent occlusion of them, and gangrene of the parts to which they are distributed. In the present instance we have evidence of chronic disease of the heart, aortic valves, and great vessels; and clear signs of inflammation, and consequent occlusion of the vessels, as the gangrene ensued and progressed. M. Cruveilhier has established the fact, by direct experiment, that inflammation of the lining membrane of arteries causes coagulation of the blood, and exudation of plastic lymph, which glues the coagulum to the vessel, obliterates its caliber; and that mortification of the parts to which such arteries are distributed speedily ensues.

"The amount of disease discovered in the heart and valves could not in life have been fully estimated from the sounds revealed by the stethoscope. There was some evidence of imperfection of the valves, and there was a bruit, but the latter was not very marked, and was more like that observed in an anemic state of the system than that attendant upon extensive lesion of the valves of the heart and aorta. The morbid condition of the left side of the heart and the congested state of the pulmonary veins account for the difficulty of breathing when in the recumbent position.

"With regard to treatment, I imagine the only feasible one in such a case was adopted, namely, large doses of opium, as taught by Pott long ago, and stimulants. The Baron Dupuytren, in his essay on Symptomatic Gangrene, refers to general blood-letting in the disease, and points out the conditions which indicate that practice.

After asking, 'Is this treatment applicable to all forms of this disease?' he says—'I think it may be advantageously adopted whenever the disease is accompanied with acute pain and much swelling, the pulse hard and full, and the face flushed.' In my patient none of these indications, save the pain, were present; and any depletory measures in her case must have been followed by very speedy dissolution. The cases, indeed, adduced by Baron Dupuytren in support of his treatment do not appear to me to come properly under the denomination of dry gangrene; and are in every respect, save pain, most unlike that under notice.

"With regard to amputating the diseased part, after the line of demarcation formed, there never seemed any favourable opportunity to have arisen; and from the state of the heart and vessels as seen on dissection, such proceeding must have been unsuccessful."

Case of Oblique Fracture of the Femur, successfully treated by the Lever Splint. By Dillon Kelly, M.R.C.S.I., Medical Officer of the Milltown-Pass Dispensary.

It is now nearly ten years since I accidentally discovered *my* lever splint (as there are others), and for eight years had not again an opportunity of testing its efficiency in fractures of the femur requiring continued extension for their symmetrical and successful treatment.

The following case, however, of oblique fracture of the upper portion of the lower third of that bone at length afforded me another example of its utility, and at the same time, as the text will show, furnished the most severe and convincing test that could, almost under any circumstances, be applied.

Taking no credit whatever to myself for any superiority which it really does not possess over the various mechanical appliances to be found in any surgical hospital for such purposes (Mr. Butcher's, for example, being the most recent), I should not have again thought of bringing it before the attention of the profession, were it not for its application to country practice, when not in the immediate vicinity of any of the county infirmaries, or when a patient should be obstinately attached to home, and unwilling to avail himself of such advantages as these institutions afford.

And, as an example of its superiority in such practice, it is scarcely necessary again to observe that my first splint was very rough and primitive in its construction indeed, being formed from the lath of a turf-crate. But here is the case.

February 14, 1857. J. Cavanagh, aged 12, partially imbecile, went, about 5 o'clock P.M., accompanied by a younger brother, to a field at the rere of the house, where their father was ploughing with two young horses, for the purpose of getting a ride home. When

near the gate of the field something frightened the one on which the younger brother was mounted, and which was led by the father, when the other, becoming also startled, took flight, plunged violently, and threw off the elder, whose right leg, in the act of falling, became entangled, just above the ankle, in the long chain tracings which were fastened across the animal's back to act as stirrups for him. Dashing wildly forwards, she rushed with him into the back yard, round which she galloped, kicking and plunging furiously all the time, the boy's head and shoulders bumping against the ground over heaps of stones and low walls; then through a narrow paved passage at the end of the house, leading to the front yard, most fortunately completely littered over with stable dung and decomposing straw, when, after a round or two, she was at length caught, and the poor little fellow extricated from his fearful position.

I saw him about an hour after the accident, and found him lying on his back in bed, his hair still matted, and his face and hands soiled with the litter through which he had been dragged, and which, added to his pallor, as he had not completely recovered from the shock, gave him a most collapsed and ghastly appearance. On removing the bed-clothes, the everted position of the right leg and foot, the shortened appearance of his thigh, a perceptible angle at the lower portion of its middle third, salient anteriorly and externally, its swollen and distorted appearance, together with its curved and exaggerated contour, convex externally, at once called my attention to that extremity as the chief seat of injury. A further examination convinced me that, notwithstanding the dreadful character of the accident, he had merely suffered oblique fracture of the femur, and that he had besides a slight wound on the forehead, and another on the occiput; that his pulse was good; that he had no confusion of ideas, no retching; or, in fact, any symptom indicative of either spinal or cerebral injury.

Being in the country, I improvised temporary splints and bandages, and put him on a palliasse, and, as that leg was fully two and a half inches shorter than its fellow, I determined on adopting the lever splint invented by me ten years since, and which I then found so effective.

On Sunday morning I found he had contrived during the night to pull away the internal splint, as it pressed slightly against the perineum, and that he had also shoved the outer one downwards, so that the thigh was exactly as when I first saw it the preceding evening. I therefore replaced the splints, laid the thigh and leg, for the time being, on a folded sheet, and did not again see him till Tuesday, when I had the lever and other splints made, and everything prepared.

The displacement being anterior and external, I first put up the fracture in the usual manner with four splints, but had the external and inferior one made of sheet iron and united by a hinge, as by such an arrangement the tendency to displacement of the lower splint by his sliding downwards towards the foot of the bed, and its

consequent motion upwards, was completely prevented. The anterior and internal splints were of wood, as usual. The external splint extended from the trochanter to the external condyle, but without including either; the inferior, as a thing of course, was much shorter, both having the curve of the thigh, and so broad that when in situ they embraced fully one half of it; the anterior the usual length; but the internal was sufficiently long to extend to the calf of the leg, and thus take in the knee.

Having already given a description of the lever splint in the fourteenth volume of this Journal, I shall merely add that I protected the perineum by the interposition of a strip of thick chamois leather, spread with diachylon, that I padded the perineal band with a "streak of flax;" that in its adjustment I passed no bandage round the pelvis, as he would not permit it; that the extending bands consisted of a silk handkerchief, clove-hitched behind the os calcis; that I put a pad of wadding between the outer aspect of the thigh, knee, calf of the leg, and the lever splint, and that I confined it so far downwards as the inner splint extended with an ordinary roller. And, to prevent the limb from rolling inwards (an idea I derived from Mr. Butcher's apparatus), I lodged the projecting end of the splint in a rest formed from a piece of soft deal, one foot long, two and a half inches broad, and three inches thick, with a notch sufficiently deep in its centre to preserve the vertical position of the splint, and with its upper surface, for symmetry, bevilled off from the notch to its extremities.

I saw him again on Thursday, the 19th, when he complained so much of the pressure of the ends of the handkerchief on his heel that I thought it necessary to apply a second handkerchief, turning the hitches to the sides just above each ankle, and tying the ends separately over the distal plane of the lever, and which turned out to be a very great improvement, as by its adoption the process of tying was so simplified that his father could occasionally unloose it and re-adjust it to give him ease.

I did not see him again until Monday, the 23rd, when I found that, notwithstanding the plain directions I had given to his father, who possessed a rough mechanical turn, and appeared perfectly to understand the nature of the fracture, and the end sought to be attained by the apparatus, he permitted him to work off the outer loop from the lever with the great toe of his left foot, and also that he had tampered with the knot of the perineal band, so that the original shortening and deformity had been restored. And it then came out that, notwithstanding his imbecility, he had sufficient cunning to impose on his father by slightly drawing up his left leg, so that both heels should be in the same plane, having heard me impress on him the necessity of seeing, at least three times a day, that both legs were of the same length. Here, then, was a most unlooked-for and annoying occurrence, as the same ground had to be gone over again, with ten whole days lost in addition.

After some little difficulty I again got the leg to its proper length,

readjusted the splints and bandages, cut the notches on the lever deeper, and squared them so that he was effectually prevented from again making use of his toe in the process of untying, and put an additional knot of stout housewife thread on the perineal band, so that further tampering with it, without the aid of a knife, was out of the question.

Sunday, 24th. Heard he complained much of his thigh and leg generally for some hours after I left, but that about 12 o'clock he fell asleep, and since that time remained perfectly quiet; and also that he asked for his breakfast, which he ate heartily some time before I saw him. On examination, I considered it necessary to readjust the perineal and lever bands, as they had stretched a little, and also to tighten the roller, as it had also become rather loose; slight œdema of the leg and foot.

Sunday, March 1st. Both legs exactly the same length; œdema increased; perineal band being much complained of, I removed it, examined the perineum, which was hot, tender, and moist, but unabraded. Had it, in consequence, washed with soft water, and sopped with vegeto, and applied a fresh piece of chamois, spread with diachylon, which he said felt nice and cool, and readjusted the perineal band, but did not consider it necessary to have it so tight as before, there not being the slightest appearance of retraction whatever of the leg on its removal.

Tuesday, 3rd. Readjusted all the splints and bandages, and found the leg quite normal in length, its symmetry unimpaired, tumefaction totally gone, and provisional callus, to all appearance, perfectly formed. I therefore had an opportunity of ascertaining exactly the site and direction of the fracture with perfect accuracy, which was before impossible from the swollen state of the thigh.

The fracture was situated in the uppermost portion of the lower third of the femur, its direction of obliquity from behind forwards, so that the upper portion was displaced forwards and slightly outwards.

In readjusting the pedal bands, as he complained much of the soreness of his ankle and heel, I thought it necessary to protect them by five or six layers of a roller before reapplying the handkerchiefs. And here I shall remark that, should I again meet with such an accident, I shall apply a few layers of a loose bandage as a preservative against the pressure of the hitches, the soreness produced by which was more complained of during the readjustment of the splints and bandages than any twist or turn of the limb.

Sunday, 8th. His father came in to say that a little girl they had as children's maid, in playing with him the evening before, gave him a sudden wrench, which he feared had done some harm, as he at once complained of being much hurt in the site of the fracture, and he cried almost incessantly all night. I saw him shortly after, and found that the anterior and inferior margin of the sheathing capsule of callus had been apparently broken up, thus constituting a sort of partial fracture, and that the anterior and inferior margin of the

fractured femur projected forwards, whilst the posterior remained in situ, so that the thigh was bent slightly backwards at the site of the injury. Slight extension, with pressure over the prominence, again restored the symmetry of the limb, which I then surrounded with a broad strap of diachylon plaster, sufficiently long to lap over its anterior aspect, and cross immediately over the site of the injury, and again readjusted the splint.

15th. I slightly loosened the perineal band, and would have removed the long splint altogether, were it not that I feared he would make some attempt to lean on the leg, as they found much difficulty in keeping him in bed the day before, when he heard the cry of the hounds.

And here I may incidentally observe that, having read Surgeon Mansfield's description of the American splint in the 6th Number of the Dublin Hospital Gazette for 1857, and having come to the conclusion not to remove the long splint for a few days more, I determined to give the adhesive loop of that apparatus a trial, and thus test its power of bearing the strain of extension. I therefore applied a strip of very strong twilled calico, triple folded, and spread with adhesive plaster, from the internal condyle of the femur to the head of the fibula, but departed a little from Mr. Mansfield's directions, inasmuch as I carried it closely beneath the sole of the foot, interposed a strip of stout calico for the lever band, applied a roller round the leg from the ankle to the knee, and tied the ends of the band over the distal plane of the lever, which I then pulled tight home with the lever cord.

At once the superiority of this mode of applying traction became apparent in the want of complaint on the part of the patient, who, on every other occasion when the lever was brought home to its proper position, invariably complained bitterly of the painful strain of the hitches on his leg and heel.

March 22nd. Removed the American adhesive loop, and found that the only elongation that took place in it was produced by the lever band acting immediately on the calico forming the loop from the ankle downwards only, the remaining portions of the strip of plaster not changing their position in the least. And I have no hesitation in saying that, were duck made use of instead of stout calico, very little elongation, if any, could have taken place. As it was, however, the play of the lever, to which the fullest power was given in the adjustment to meet such an anticipation, was fully equal and to spare, as two inches, if not more, of elongation could be obtained, if necessary, by merely tightening the lever cord; at the same time that the greatest amount of elongation could be equated for by shortening the perineal band, and thus protruding the splint to the required distance beyond the foot.

Before dropping the subject of the American adhesive loop, I shall observe that, through the kindness of Dr. Ferguson, who wished to test its power, I also applied it, with my splint, on a patient in the Infirmary, a boy eleven years old, whose thigh was frac-

tured transversely through the centre of its upper third, on whom it was allowed to remain for about twelve days, and with equally satisfactory results. And, by the way, the contiguity of the injury to the hip-joint not only produced vital anchylosis of it, but, if I may use such an expression, of the fracture also, not alone producing its perfect coaptation, but so effectively surrounding its site with condensed muscle and integument, that Dr. Ferguson was firmly convinced nature alone would have completed the process of perfect symmetrical repair, without the slightest artificial interference whatever, provided the patient could only be kept quiet. And I should also have said that, together with the vital anchylosis, elongation of the limb to fully the extent of $2\frac{1}{4}$ inches was also present, thus simulating the second stage of morbus coxæ, and which continued until the provisional callus was sufficiently firm to give it proper support, when it gradually disappeared, the limb again resuming its normal length, and the hip-joint its perfect and natural mobility. So much, in digression, for the American loop and fractures in the immediate vicinity of the hip-joint.

Having put on a starch bandage, and applied a roller on the leg, I got him up, and in two days he was hopping about on crutches, to his own great delight,

26th. Finding it impossible to induce him to keep his foot in a sling, which he said pulled his broken leg so much before his sound one in progression that it would "trip him up," it became so very much swollen, more especially about the knee, that I found it necessary to remove the starch bandage and again apply the lever splint, as no other means would confine him to bed. The swelling was peculiar,—œdematous on the dorsum of the foot, but about the knee, where it was very much exaggerated, it presented a sort of mixture of œdema and emphysema, yet partaking very little of the characters of either, falling down over the bandage on the leg in a loose flaccid fold, capable of being moved about in every direction, and perfectly painless, but productive of immense anxiety to his mother.

April 2nd. Reapplied the starch bandage on the plan of Mr. Hamilton, and again put him on his legs; in a fortnight he was able to put on a shoe and hop about with one crutch; in three weeks he could bear well on it, when I removed the starch bandage, substituting a light roller instead, and in one month from the period of his getting up he could walk exceedingly well without help of any sort.

In May, 1858, I examined him carefully, and found there was no difference whatever between it and the other leg, either in length, appearance, or capability of bearing those shocks to which he occasionally subjects it; yet, on running my finger over the site of the injury, a thickening of the bone on that point was distinctly sensible to the touch, although not to the eye.

I now see him almost daily, and he neither complains of nor appears to suffer any inconvenience from the injury, using, or rather abusing, that leg much more than the other, not only to show its

strength to his companions, but also to annoy a poor little fellow in his immediate neighbourhood, who is a cripple.

Such is a detail of the difficulties I had to encounter in this case, which were chiefly produced by the partial imbecility of the patient, and who, were his attention withdrawn from the subject of the injury, even whilst readjusting it, would appear as if quite unconscious of pain. And, by the way, these are difficulties which the fortunate country practitioner meets with, almost daily, in cases where either the circumstances of the patient or his love of home prevent him from taking advantage of the benefits held out to him so liberally by the county hospitals.

Cases from Practice. By ALEXANDER W. WALLACE M. D. Parsonstown.

On the Use of Iron in Puerperal Fever.—In the Number of the Edinburgh Monthly Journal for September, 1852, Dr. Begbie published a paper on Erysipelas, in which he details his experience of the value of the Tincture of the muriate of iron in that disease, administered as first proposed by Dr. Bell. At the close of the paper he suggests that it may also be found available in puerperal fever.

Having often had occasion to verify in my own experience the statement of Dr. Bell relative to the curative effect of iron in erysipelas, I resolved to give it a trial in the first cases of puerperal fever that should come under my notice. Of the first two cases that I had, I have unfortunately kept no notes. They were so unpromising that I had no expectation of a favourable issue, and I gave the iron with no anticipation of its doing decided good. The case now to be narrated is, however, quite parallel to the other two, except that in one of them there was an eruption all over the body of bullæ, filled with pus, and the further complication of hepatization of one lung.

Catherine Edwards, aged 25, in comfortable circumstances, but resides in an unhealthy part of the town. A river runs in part under the house, which is a three-story one; pigs are kept in the back yard and kitchen; bones, rags, leather, &c., are largely stored on the premises; and every description of filth has been allowed to accumulate. Labour commenced on the 16th May, 1859; membranes are stated to have ruptured at 2 P. M. on the 17th. She was first seen by me an hour after. The os was not fully dilated, very rigid; head presenting, pains strong. To have one-eighth of a grain of tartar emetic every half-hour. 7 P. M. No advance of head; pulse very frequent. To have one drachm of solution of muriate of morphia.

18th. 4 A. M. No advance of head; pains violent. Delivered with forceps with difficulty; child dead. To take solution of muriate of morphia, 80 minims, with an additional dose of one drachm at noon. There was some laceration of the perineum, and a copious discharge of dark liquid with the child. Evening. Pulse 108; feels comfortable.

19th. Has passed an indifferent night; pulse 108; belly tympanitic, slight tenderness. Ordered twelve grains of Dover's powder at night.

20th. Had a violent shivering fit during the night. Pulse 100; belly tense and tender; countenance sunk and anxious; lochia fetid and milky. Ordered hot fomentation, two grains of calomel, two grains of gray powder, and five grains of Dover's powder, every three hours. Evening. Tenderness less; pulse 136. Continue powders. To have an enema, composed of two table-spoonfuls of fresh-burnt charcoal in fine powder, beaten up with an egg, and diffused in half a pint of water.

21st. Bowels moved about ten times during the night; tongue whitish, moist; pulse 120. To have beef-tea. Discontinue powders. To have three grains of solution of chlorinated soda every fourth hour; a charcoal enema, with one drachm of solution of morphia, and one drachm of chlorinated soda. Evening. Bowels thrice moved; belly less tympanitic and tender; pulse 124. Continue chlorinated soda, and repeat the charcoal enema, combined with three grains of opium.

During the succeeding week her condition continued very much as above described. On the 24th she had two or three shivering fits; the pulse varied from 120 to 145. She had frequent attacks of diarrhœa, the belly being very tympanitic and rather tender. The countenance was dingy, sunken, and anxious. There was never any delirium.

On the 28th the pulse was 100, and there was some improvement in her appearance. During this period the treatment consisted in the administration of charcoal enemata once or twice a day, with the addition of opium when requisite on account of diarrhœa. The tincture of the muriate of iron not seeming to agree, it was exchanged for the ammonio-tartrate of iron, given in three or four-grain doses every fourth hour. Opiates were also occasionally given at night. Her diet consisted of strong soups and a moderate allowance of wine. Her improvement was gradual from the 28th; but the diarrhœa was long troublesome, and on account of it the iron was given in the form of persesqui-nitrate. She also suffered for many weeks from pains in the hip and swelling of the leg.

On this case I would remark:—1. This, as well as the other two cases to which I have referred, was, no doubt, an instance of blood-poisoning, resulting from a change in those substances which necessarily exist in large quantity in the blood, soon after delivery, from the absorption of the uterine substance, &c., and which are in a state of retrograde metamorphosis. 2. This poison is known to exercise a destructive influence on the blood corpuscles. 3. It is probably eliminated from the system by the bowels and by the skin. 4. The iron may be expected to be beneficial, partly by its action as an eliminator, but still more by its action as a restorer of the blood discs. 5. The charcoal is useful in absorbing at once any of the poison that is thrown out into the bowel, and perhaps even by acting on it in the blood through the coats of the intestinal vessels.

Pelvic Abscess.—I am induced to publish the two following cases because in their early stage they were very obscure:—

CASE I.—Mrs. J., aged 30, widow, slight and delicate, was seized suddenly,on December 10, 1858, with pains in the right side of the abdomen, which prevented her standing upright. On examination she was found somewhat feverish; pulse 90 to 100. A deep-seated hard swelling could be felt in the right iliac region. A few leeches were applied over the seat of pain, and afterwards hot fomentation. Minute doses of mercurial powder were given. In a few days the tumour began to recede, at first slowly, afterwards rapidly. Iodide of iron was then given, and the tumour painted with tincture of iodine. Being now convalescent, she went to Dublin; and, having there used imprudent exertion, the tumour returned, and I learned that it went on to suppuration, entailing on her a tedious illness.

CASE II.—Mr. W., commercial traveller, aged 40, has been living freely. On the 15th April, 1859, he applied to me, complaining of severe pains in the abdomen, particularly on the right side, and a sensation as if the contents of the abdomen were falling out. The belly was unusually resisting to pressure, particularly on the right side, where there was dulness on percussion. He was ordered a dose of blue pill and henbane. In the evening I was sent for to his hotel, as he was much worse. The pain was very severe; tongue foul; pulse 76. To have ten grains of calomel and two grains of opium at bed-time, and a dose of castor-oil in the morning.

16th. Bowels moved several times; motions dark and offensive; still much pain. In the evening a distinct fulness was perceptible in the right ileo-lumbar region, reaching almost to the ribs, tense, and very painful on pressure. Twelve leeches, followed by linseed-meal poultices, to be applied to the affected part; an opiate at bed-time.

17th. Pains much relieved. Some diarrhœa, with much griping; gums slightly affected. To have iodide of potassium, and morphia when the griping is troublesome.

18th. Swelling less painful, and beginning to diminish. Six leeches to be applied, and poultices to be continued.

20th. Continuing to improve; tumour diminishing; bowels still loose, but discharges more natural.

25th. Swelling nearly gone. He is leaving town. Was recommended to paint the part with iodine, and to take syrup of the iodide of iron.

I afterwards learned that his recovery was complete.

Paralysis after Delivery.—Mrs. C., aged 24, was confined on the 18th April, 1859; easy labour. Had suffered much from ill health during pregnancy, and was pale and anemic. After her confinement the pulse continued at about 108, but she had no other bad symptom. On the tenth day after her confinement she was on the sofa, and had a bowl of broth, when she suddenly became ill. On being visited in half an hour after, she was pale; pulse 70, quiet. She could articulate with difficulty; tongue protruded to the right side. Complains of pains in the left temple, and numbness on that side of the face and in the right arm and leg. There is no twisting of the

face. Ordered to be kept quiet, and to have half a drachm of aromatic spirit of ammonia every third hour.

28th. Is in much the same state. Urine very scanty, with deposit of lithates; bowels confined. To have compound colocynth pill at bed-time, ten minims of tincture of muriate of iron, and five minims of wine of colchicum, every third hour.

30th. Speech is considerably improved; headach gone; is on the sofa.

May 1st. Continues to improve. To have citrate of iron and quina.

18th. Is now nearly well; complaining only of slight numbness in two fingers of the right hand.

Her recovery was ultimately complete.

Remarks.—I have recorded this case as illustrative of a class in which the routine treatment of paralysis would be highly dangerous. One every now and then meets with similar cases in hysterical and anemic females, in which it may be difficult to state what is the exact cause of the paralysis, except that it is probably connected with insufficient nutrition, though it may also depend on the retention of some noxious matter in the blood. The principles of treatment are obvious enough when one has got disabused of the idea that paralysis and plethora necessarily go together. In the case above narrated colchicum was given, with a view to its action in promoting the secretion of urea.

Statistics of Urinary Calculi in Hungary. By Professor Balassa, of Pesth.

During twelve years' tenure of office, 135 persons labouring under calculous affections presented themselves for treatment at the Surgical Clinique in Pesth. Of these, there were between the ages of one and seven, 21, or 15·556 per cent.; between eight and fifteen, 32, or 23·703 per cent.; between sixteen and twenty-five, 47, or 34·815 per cent.; between twenty-six and fifty, 27, or 20·000 per cent.; between fifty-one and sixty, 6, or 4·444 per cent.; between sixty-one and seventy, 2, or 1·482 per cent.

Classified according to their occupation, there were among the patients, husbandmen, 82, or 60·741 per cent.; mechanics, 39, or 28·889 per cent.; shopkeepers, 7, or 5·186 per cent.; persons holding official situations, 2, or 1·482 per cent.; landed proprietors, 2, or 1·482 per cent.; students, 2, or 1·482 per cent.; teachers, 1, or 0·738 per cent. It was, therefore, chiefly among youthful individuals (100 were under twenty-six years of age) that the affection had occurred, and as at the same time (from 1843 to 1855) not fewer than 49 calculous patients had been under treatment in the Children's Hospital at Pesth, it follows that in Hungary urinary calculi are met with most frequently in childhood and youth. But, as the disease occurs most commonly among agricultural labourers (82 times), and

is likewise very often observed among mechanics (39 times), it must be admitted that it is, comparatively speaking, a disease of the less affluent classes,—a fact which is further confirmed by the statistical tables of Dr. Iványchich. The cause of this is to be found in the food, which among children of poor parents consists of coarse meal, dry pulse, cabbage, potatoes, fat pork, and bacon, that is, in substances rich in compounds of carbon and difficult of solution. The author operated on 122 of the 135 patients, and possesses the calculi of 83. Of these, which were examined by Moriz Say, Assistant to the Chair of Chemistry in Pesth, 63 exhibited a homogeneous composition throughout; in 19 the nucleus differed in constitution from the body; and in one the external layer again differed from the rest of the body. Of the 63 whose composition was homogeneous, the principal ingredient was, in 20, oxalate of lime; in 13, ammoniaco-magnesian phosphate; in 8, uric acid; in 7, urate of ammonia; in 7, a mixture of basic phosphate of lime and ammoniaco-magnesian phosphate; in 6, basic phosphate of lime; and in 2, carbonate of lime. Of the 20 nuclei which differed from the bodies, the principal ingredient was, in 12, oxalate of lime; in 6, urate of ammonia; in 2, uric acid. Of the 20 bodies surrounding these nuclei, 9 contained as principal constituent ammoniaco-magnesian phosphate; 8, a mixture of this latter with basic phosphate of lime; 2, basic phosphate of lime; 1, carbonate of lime. A single nucleus was surrounded by a dissimilar body, the outer layer of which possessed nearly the composition of the nucleus, and contained only a small admixture of the ingredients of the inner layers. Albuminoid matters were found in 27 calculi. In 2 calculi, consisting chiefly of oxalate of lime, some silicic acid was found in the form of a fine white sand. 20 calculi of more homogeneous composition presented in 12 cases a nucleus consisting of oxalate of lime, while the body of the stone contained none of that substance. On the other hand, in 19 instances basic phosphate of lime, ammoniaco-magnesian phosphate, or a mixture of both, appeared to be the material composing the body, while none of these salts formed any part of the nucleus. Carbonate of lime was found 15 times in the calculi; in these it appeared only once in the outer layer, and not once in the nucleus of the stone. Uric acid occurred in 72 calculi, but only 23 times did it constitute the principal ingredient, while oxalate of lime was the most frequent principal ingredient, as in 20 calculi it formed the chief mass, and in 12 composed the nucleus.

Hence the author infers: 1. That in Hungary the formation of calculus occurs most frequently in consequence of the richness of the urine in oxalates, to which the carbonaceous material in the bad food contributes. 2. That while the cause of the original formation of urinary calculi lies in the richness of the urine in oxalates and urates, the increase of the already existing calculus may indeed be derived from the phosphates contained in the urine, but cannot originally depend upon them, as in more than half the cases (45) a disproportionately large amount of phosphate is found in the calculi. Hence the problem of preventing the original formation and renew-

ing of urinary calculi must be solved by acting on the oxalates and urates. Vesical catarrh has no influence on the origin of oxalic and uric calculi, while phosphatic calculi are always attended with a high degree of it. The author cannot decide whether the distoma hæmatobium contributes to the origin of urinary calculi in Hungary, as is the case in Egypt. He further observes that the oxalic calculi in his collection are for the most part roundish and mulberry-shaped, of brown colour, very heavy, dense, and laminated; while the uric calculi are longish, roundish, flattened, smooth, brighter-coloured, lighter, and for the most part laminated. The phosphatic calculi, on the other hand, are spherical or cylindrical, and appear to be of more uniform structure, soft and light.—*Vierteljahrschrift für die praktische Heilkunde*, Band 62, part 2, page 64.

Case of Sudden Death caused by a Needle penetrating the Pericardium
By C. SOVERINI. (Read before the Accademia delle Scienze dell Istituto di Bologna.)

THE author prefaces the history of the case by referring, for the sake of the comparison, to one of sudden death from rupture of the heart, detailed to the Academy by Professor Medici in 1835, and to a paper by the President, Professor A. Alessandrini, on some organic degenerations observed in the hearts of cattle in 1841, and which were caused by pins swallowed with the food.

Paolo Guidi, a robust porter, aged 37, having been accustomed to keep needles in the breast of his shirt, it seems probable that, without perceiving it, while he was hastily dining, he swallowed one which had accidentally fallen into his food. In fact, for some days after, he felt slight pain inthe throat, and subsequently great weakness and general uneasiness. Disregarding these symptoms, which were unusual to him, he attempted, on the 26th of May, to carry a heavy load, which brought on sudden and serious deliquium. He was without delay conveyed to hospital, when it was found that he was cold as marble; there was extreme pallor, the pulse was imperceptible, the respiration was very weak, the cardiac sounds were inaudible; there was loss of sensation and motion.

After lying on his back for three hours, during which time everything was done to restore him, he recovered to a slight degree the power of sensation and motion; but complained of a feeling of oppression in the throat, where nothing wrong could be discovered. Suitable treatment having been adopted to remove the depression, of which the true cause was unknown, decided febrile reaction set in on the 28th, and was combated by the author, after he had examined the chest by percussion and auscultation, with antiphlogistic measures persevered in during two days. The patient considered that he was cured, and he even felt so strong and active that he was speaking to his relatives and making preparations for shortly leaving the hospital, and, having sat down on the bed, he took leave of them cheerfully, when, falling again nearly into the horizontal posture, he suddenly expired without saying a word or moving a limb.

After the lapse of twenty-six hours, the body was examined by the author. The countenance preserved the placidity of the last moment. On opening the chest, the most striking phenomenon was that presented by the pericardium, which projected above the level of the lungs, appearing like a large and swollen bladder, of a dark red colour. On cutting this, a large quantity of blood (four and a half pounds), for the most part coagulated, but still partly fluid escaped. On seeking for the cause of this effusion, a large sewing needle, upwards of an inch and half (four centimètres) in length, was found. This was fixed in the posterior and right part of the pericardium, at the distance of about half an inch from the arch of the diaphragm, the pointed half being found within the sac of the pericardium buried in the grumous blood, while the half corresponding to the eye occupied the cavity of the pleura, between the lung and the serous coat of the pericardium, the direction being from behind forwards, and from below upwards. Notwithstanding the presence of the needle, the two membranes of the pericardium exhibited no deviation from their ordinary physiological state. The heart, contracted on itself, pale and void of blood, presented externally on the posterior surface of the right ventricle a laceration, which for a few lines below the base passed towards the apex of the same ventricle, running nearly parallel to the anterior or inferior angle of the heart, from which it was distant about a quarter of an inch. This laceration, which was of an irregular figure from the superior to its inferior point, measured, on tracing its curvilinear course with a wire, about three-quarters of an inch; from the left point to the opposite it measured only one-fifth more. The laceration implicated only the exocardium, the superficial layer of muscular fibres of the right ventricle, and the coronary vessels running therefrom; in particular, the two branches of the right coronary artery, and the two adjoining veins. There was no doubt that the patient's sudden death was attributable to the copious effusion of blood in the sac of the pericardium caused by this laceration, which was certainly produced by the needle found after death; inasmuch as the other neighbouring parts, and those belonging to respiration, were in a natural state, with the exception of a slight degree of abnormal redness in the mucous membrane of the lower part of the pharynx, of the œsophagus, of the fundus of the stomach, and in one of the inferior loops of the small intestine.

Having recapitulated the foregoing particulars, the author concludes, that needles swallowed in greater or less number may during a long course of years remain in the body, giving rise to many and various inconveniences without destroying the life of the individual, until they are either eliminated by the natural passages, or reach a situation whence they can be extracted by art, as Daunio, Petit, Vallisnieri, Villars, Silvy, and Ferrario have recorded; a single needle swallowed, in like manner, may, on the other hand, lead in a short time to certain and inevitable death, as the case just related clearly demonstrates.—*Bulletino delle Scienze Mediche di Bologna*, April, 1859, p. 302.

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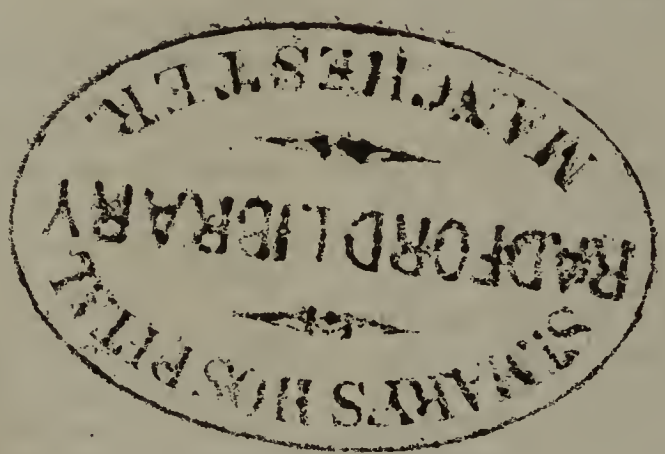

END OF VOL. XXVIII.

Gold medal: Henry C. Richmond, Liverpool College; bronze medal: Jas. Dearden Wilde, Manchester Grammar School. Other candidates who have eminently distinguished themselves in the examination:—Edward Crabb, Manchester Grammar School; James Henry Collins, Liverpool College, M. L. Lewis, City of London School, equal; Harold Bailey Dixon, Westminster School; Douglas Samuel Boutflower, Rossall School.

PHYSICAL GEOGRAPHY.—Examiner, Alfred R. Wallace, Esq., F.R.G.S.—Gold medal: William Grundy, Rossall School; bronze medal: George William Gent, Rossall School. Other candidates who have eminently distinguished themselves in the examination: George Grey Butler, Liverpool College; Martin Stewart, Rossall School, Alexander Stoddart Wilson, Glasgow High School, equal; Gerald Baldwin Brown, Uppingham School; Ernest Chester Thomas, Manchester Grammar School.

The president presented the medals to Mr. Richmond and Mr. Wilde, commenting upon the character of the examination which they had passed through with so much success. He said that Mr. Richmond had answered questions off-hand which would have puzzled many old geographers.

A gentleman from Rossall School received the medals awarded to the competitors from that school.

The Founder's Medal, awarded to Professor A. E. Nordenskiold, of Stockholm, for the leading part he has taken in the recent Swedish expeditions in the North Polar Regions, and particularly for the preparation, with his colleagues, of the valuable new map of the Spitzbergen [illegible] by the president to the Swedish

SALFORD HUNDRED QUARTER SESSIONS.

An intermediate sessions for this division of the county commenced at the Assize Courts, yesterday, under the presidency (in the absence of Mr. A. Milne, the chairman) of Mr. J. T. Hibbert, M.P. The following magistrates were also present:—Rev. J. S. Birley, Messrs. Robert Gladstone, H. L. Trafford, H. J. Leppoc, A. Aspland, John Leigh Becker, C. H. Rickards, Robert Barnes, James Worrall, William Harvey, John Bradbury, J. S. Mayson, Joshua Crompton, George Andrew, Thomas Evans Lees, J. F. Mart, John Fenton, John Dawson, and H. Lee.

NEW MAGISTRATES.

The following gentlemen took the necessary oaths and qualified as magistrates for the county:—Messrs. Peter Morrison, Leyfield Priory, West Derby, Liverpool; Francis Taylor, George-street, Manchester; James Newton, Watersheddings-house, Oldham; Thomas Bernard Gunston, Prescot; Joshua Milne Cheetham, Bent-hill, Prestwich Francis Anderson Clint, Durham-house, Liverpool; Edwd. Ashworth, Stag Hills, Waterfoot, near Manchester; Henry Maden, Rockcliffe-house, Bacup; Albert Fenton, Crimble-hall, Heywood; Richard Harwood, West Bank, Bolton; Elkanah Armitage, The Rookery, Eccles; Henry Lee, Sedgley Park, Manchester; John Rylands, Longford-hall, Stretford